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The Wang Professional Computer Introductory Guide and
The Wang Professional Computer Utility Programs User Guide
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This update contains new information that reflects the current specifications and functions of the Wang Professional Computer and its system software. The update is divided into three parts. Part 1 provides general comments on updated specifications, procedures, and functions described in the Introductory Guide. Part 2 provides a correction to Chapter 8 of the Introductory Guide. Part 3 lists chapter-by-chapter changes to the Utility Programs User Guide.

PART 1 -- General Comments

- There is now a System Diskette III, which includes the WINCHESTER BACKUP and WINCHESTER RESTORE utilities and the BASIC interpreter. This diskette is shipped with all Wang Professional Computer systems. Refer to The Wang Professional Computer Utility Programs User Guide for instructions on how to run the utilities. Refer to The Wang Professional Computer BASIC Language Guide for instructions on how to use interpretive BASIC.
- On systems with two diskette drives, it may be convenient to modify the system menus so that System Diskette I can always remain in Drive A and System Diskette II can always remain in Drive B. This avoids having to remove System Diskette I from Drive A and replacing it with System Diskette II every time you want to access a program on System Diskette II.

To make the necessary modifications to the system menu files, run the MODIFY SYSTEM MENUS utility as a single-drive user. You must modify the menu files UTILITY.DAT, PRGDVMEN.DAT, APPMENU.DAT, and PRINTMNU.DAT. Refer to The Wang Professional Computer Utility Programs User Guide for instructions on how to use the MODIFY SYSTEM MENUS utility. Edit the Work Screen for each menu file as follows:

- UTILITY.DAT - For the Check Disk, Disk Copy, File Copy, File Copy with Append, and File Compare options, change the On Drive specification to B.
- PRGDMEN.DAT - For the Basic and Editor options, change the On Drive specification to B.
- APPMENU.DAT - For the Convert Document to Text and Convert Text to Document options, change the On Drive specification to B.
- PRINTMNU.DAT - For the Edit Printer Function Table and Edit Printer Index Table options, change the On Drive specification to B.
- For the PC-PM012 daisy printer to run correctly, its baud rate must be set to 1200. Refer to Appendix I of the Introductory Guide for instructions on how to determine if the baud rate is set correctly.

PART 2 -- Introductory Guide Correction

The Winchester Disk Drive

Page 8-2

Add the following paragraph to the information on installing the system software to the Winchester disk and controlling the system from the Winchester disk drive:

If you are copying the system diskettes onto a Winchester disk that already contains system files you have modified, the FILE COPY utility replaces those files with the system files from the diskette. Therefore, if your Winchester already contains a copy of CONFIG.SYS that you have modified, do not copy the CONFIG.SYS file from the diskette. Also, if you have customized the system menus on the Winchester disk, note all changes; you must make these changes again after the new system menus have been copied.

PART 3 -- Utility Programs User Guide Corrections

Reserved File Names

Page 1-7 If you are using reserved file names to refer to a printer, use PRN for parallel printers and PRN1 for serial printers.

MODIFY SYSTEM MENUS Utility

Page 2-40 Add the following to the discussion on how to use the entries on the work screen:

Use Edit Help Screen when you want to change the text on the Help screen for a particular menu entry or add a Help screen for a new entry. To edit an existing Help screen, position the cursor next to the menu entry. Then, select Edit Help Screen and press EXEC. The existing menu appears on the screen. To modify it, move the cursor to the section you want to modify by pressing RETURN or the East and West cursor keys. (You can only move forward in the file. If you want to change an item above the cursor position, you have to reenter the Help screen.) Enter new text in blank positions or over existing text, or press DELETE to erase existing text. Press EXEC to save changes to the existing Help screen.

When you are creating a new Help screen, a blank Help screen appears. Enter the new text starting at the upper left-hand position on the screen. Press EXEC to save the new Help screen. It is stored on the same disk as the new menu entry.

WINCHESTER RESTORE Utility

Page 2-73 (Comment 6) If you leave the File ID field blank, the system selects all of the files for RESTORE by default.

COPY Utility

Page 4-21 (Comment 6) If you are creating a file using CON, you must terminate the last line in the file by pressing RETURN, CONTROL + Z, and RETURN. To delete the file, press RETURN and CONTROL + C instead of the first sequence.

CTTY Utility

Page 4-25

Add the following paragraph to Comment 1:

When passing control to a device which cannot pass control back to the main system's keyboard (e.g., a printer or monitor without a separate keyboard), use a batch file. Within the batch file, include the CTTY commands to switch from the main system's keyboard to a device and back again. Then, the system executes these commands even if the auxiliary device does not have the capability to return control to the main system's keyboard independently.

WPCONV Utility

Page 4-66

The screen that appears when you enter the WPCONV command is as follows:

```

                                Wang Professional Computer
                                SYSTEM UTILITIES - TEXT FILE TO DOCUMENT
                                Release 1.20

Input Text File:
  Drive: _
  Path:  _
  File Id: _____ Extension: ____

Output Document:
  Drive: _
  Path:  _
  File Id: _____ (If blank, same as source)

-----
                                EXECUTE - Proceed
                                CANCEL  - Return to Menu
                                RETURN  - Go to Next Field
                                HELP    - Help Screen
```

When you identify the file specification for the output document, you can include a path name, even if it is different from the source text file.

FORMAT Utility

Page 4-35

To transfer the CONFIG.SYS file along with the system files during a disk format, you must use both the -S and -G switches in the FORMAT command, as follows:

FORMAT -S -G

You cannot use the -G switch without the -S switch; otherwise, an error occurs.

Update-4

THE WANG PROFESSIONAL COMPUTER

Introductory
Guide

Introductory Guide

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The Wang Professional Computer Introductory Guide

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WANG LABORATORIES, INC., ONE INDUSTRIAL AVENUE, LOWELL, MA 01851 • TEL. (617) 459-5000, TWX 710-343-6769, Telex 94-7421

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Federal Communications Commission (FCC) Information

The Federal Communications Commission (FCC) requires that information regarding the interference potential of electrical equipment be included in the user documentation for the equipment.

Wang Laboratories, Inc., manufactures both FCC certified Class A Professional Computers and Class B Professional Computers. To determine which of the following warnings apply to your equipment, read the sticker affixed to the side of the back panel of your PC.

For Class A:

Warning: This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

For Class B:

Warning: This equipment has been certified to comply with the limits for a Class B computing device pursuant to Subpart J of Part 15 of FCC Rules. Only peripherals (computer input/output devices, terminals, printers, etc.) certified to comply with the Class B limits may be attached to this computer. Operation with non-certified peripherals is likely to result in interference to radio and TV reception.

Note: The cables provided with the Wang PC Models PC-001-B, PC-002-B, PC-003B-B, PC-004A-B, and PC-005-B) for the monitor, keyboard, and printers are special shielded cables and contain ferrite torroids. To ensure compliance, *no substitute cable is permitted.*

For the Remote Telecommunications option (Model 2PORTTC), 3-port Communications option (Model 3PORTTC) and Low Resolution Option (Model ISGB), the user may provide cables. To ensure Class B compliance, braided shield cables must connect the shield through a metal connector backshell to metal screws that secure the connector to its mating connector.

Multiplan is a trademark of Microsoft Corporation.

PREFACE

The Wang Professional Computer Introductory Guide is designed to help you understand how to use your Wang Professional Computer (PC). The guide provides you with four types of information:

- Descriptions of the Wang Professional Computer's major components and available options
- Procedures that describe the installation and expansion of your Wang Professional Computer system
- Instructions on how to operate your system
- Technical reference material about the Wang Professional Computer

Each chapter in the Introductory Guide discusses one major aspect of the Wang Professional Computer system. The topics presented in each chapter are summarized below.

Chapter 1 Introduction: Describes each of the Wang Professional Computer's basic components. Describes how the combination of Wang's product design and product support strategies help you use and maintain your system.

Chapter 2 Setting Up Your Wang Professional Computer: Presents instructions on how to unpack your system and connect its three major components.

Chapter 3 -- Getting Acquainted with Your Wang Professional Computer: Provides step-by-step instructions on starting the system, formatting diskettes, backing up diskettes, restarting the system, accessing a disk directory, and loading an application.

Chapter 4 -- Computer Concepts and Terminology: Explains the fundamental computer concepts and terminology that you should understand before you read subsequent chapters in the Introductory Guide. The concepts discussed include files, disk organization, external storage, prompts, and menus.

Chapter 5 -- Using Diskettes: Explains what a diskette is and describes the different types of diskettes you can use on the Wang PC. Lists the parts of a diskette and explains the function of each part. Describes how you should take care of diskettes.

Chapter 6 -- Using the Keyboard: Provides a description of the function of each key within the major keyboard groups.

Chapter 7 -- Using the Wang PC System Screens: Describes each of the Main System Menu options. Also includes instructions on how to run and load programs in the interpretive BASIC programming language.

Chapter 8 -- Using Your Winchester Disk Drive: Tells how to transfer information to and from the Winchester disk. Describes how to start and control your system from the Winchester disk.

Chapter 9 -- Electronics Unit Options: Describes each of the Wang PC option cards and provides a general installation procedure. Also provides step-by-step instructions for installing the Winchester drive, a second diskette drive, and the electronics unit desk clamp.

Chapter 10 -- Monitor Options: Tells how to connect a monitor other than the Wang Monochrome Monitor to your PC system. Describes how to assemble and attach the monitor arm.

Appendices: Present technical information about the Wang Professional Computer, including solutions to common problems; an explanation of the System Diagnostic tests; a system summary; lists of error messages and keyboard codes and their meanings; a list of all files on System Diskettes I and II; instructions on how to safely transport your system and change the voltage setting; procedures for installing a device driver and for customizing the system software; and a glossary of Wang PC terminology.

Use this manual in conjunction with The Wang Professional Computer Utility Programs User Guide.

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1

INTRODUCTION

Overview

Identifying Your System's Components

Preventing Problems

CHAPTER 1 INTRODUCTION

1.1 OVERVIEW

This Introduction is designed to acquaint you with your Wang Professional Computer. If you read the general information contained in the Introduction, you will find it easier to unpack, connect, and use your computer.

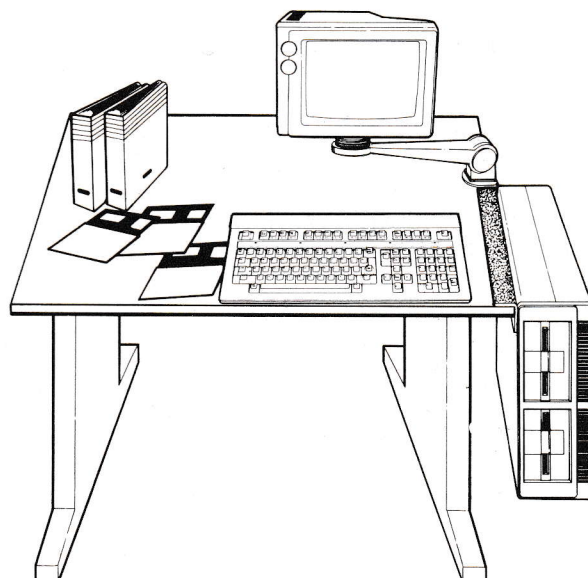


Figure 1-1. The Wang Professional Computer

The Introduction explains the importance of each of the major components that make up your Wang Professional Computer system. In addition, the Introduction describes the various kinds of resources you can turn to for help in solving problems that might arise as you begin to use your system.

The Wang Professional Computer is a multifaceted tool that you can use to solve business problems. With the appropriate software, you can collect, manipulate, and analyze any type of information. For example, with the Multiplan software available on the Wang PC, you can do complex spreadsheet analyses of budgets, acquisitions planning, and economic forecasting. Similarly, Wang PC Word Processing software uses the powerful capabilities of the computer to facilitate all aspects of your business communications needs. You can easily write, edit, and update letters, memos, and reports by using Wang PC Word Processing. In addition to using software packages such as Multiplan and Wang PC Word Processing, you can develop programs using various programming languages including BASIC, COBOL, FORTRAN, assembly language, and Pascal.

The Wang Professional Computer system blends neatly in any office space. It is easy to set up and easy to use. Most importantly, you can expand the capabilities of the Wang Professional Computer to meet your professional needs. You can expand its physical capabilities, add to its functionality, create new applications to solve your particular business problems, and integrate these expanded capabilities into all aspects of your work.

1.2 IDENTIFYING YOUR SYSTEM'S COMPONENTS

Your Wang Professional Computer system is made up of four basic components. Each of the basic components plays a vital role in the operation of your system. Of course, you can add additional components to your system to enhance its capabilities. However, your system is not complete until it includes each of the four basic components. These include:

- the keyboard
- the monitor
- the electronics unit
- the System Diskettes and manuals

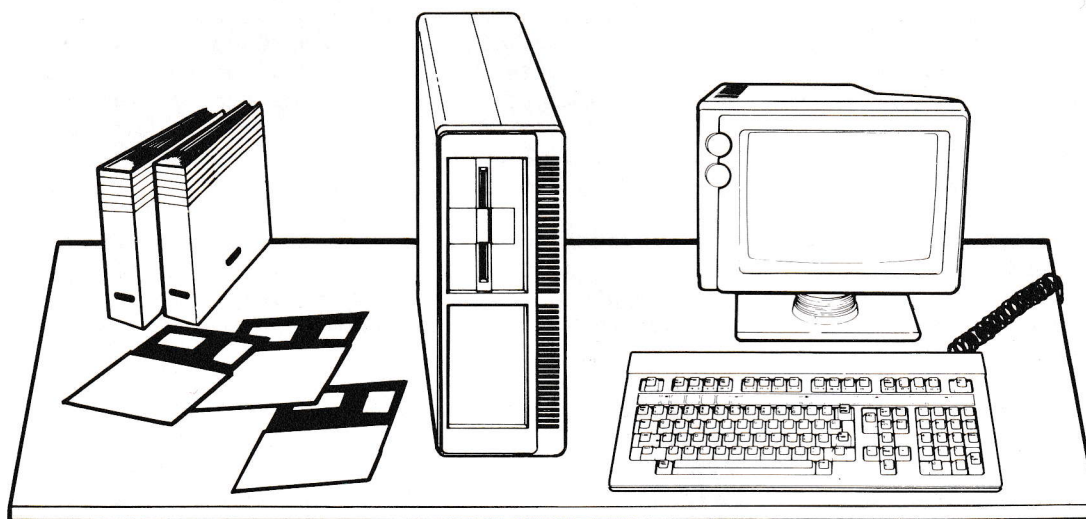


Figure 1-2. The Four Basic Components of the Wang PC

Although there are many possible ways to configure the Wang PC, every Wang PC is built upon a common foundation. This common foundation, known as the Base Unit, consists of the keyboard and the electronics unit with a single diskette drive, as shown in Figure 1-3. The Base Unit also includes System Diskettes I and II, the System Diagnostics diskette, The Wang Professional Computer Introductory Guide, The Wang Professional Computer Utility Programs User Guide, and The Wang Professional Computer BASIC Language Guide.

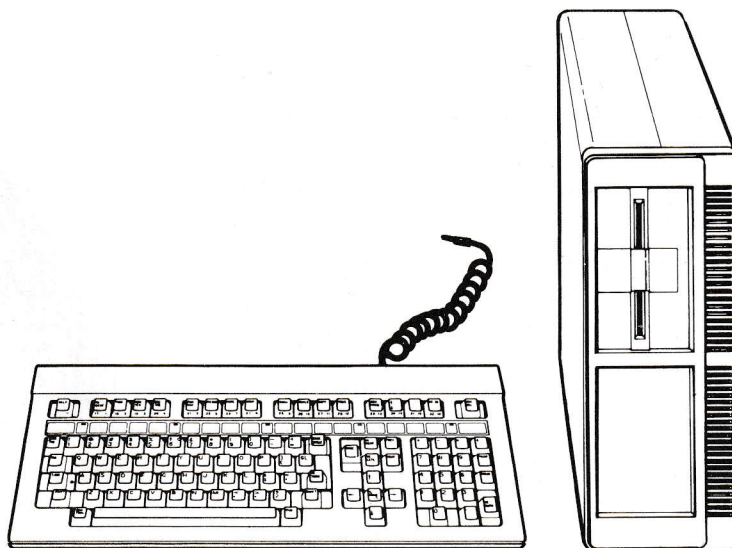


Figure 1-3. The Base Unit

With a Base Unit, you can select the type of video capabilities that match your needs. When you add a monitor to the Base Unit and install the appropriate video card, you complete your Wang Professional Computer system. You can use the Wang Monochrome Monitor, any black-and-white monitor, or any red-green-blue (RGB) color monitor. Chapter 9 describes the implications of using each type of video card. If you have a preconfigured system, the appropriate video cards are already installed within the electronics unit. All preconfigured systems use the Wang Monochrome Monitor.

You can install a second diskette drive or a Winchester disk drive within the electronics unit. You can also add more main memory, various communications facilities, Wang-supplied or system-compatible printers, and various software applications such as Wang PC Word Processing or programming languages such as FORTRAN.

Two accessories are also available to provide a unique method of incorporating the system into your office. The desk clamp allows you to attach the electronics unit to the side of your desk. The monitor arm raises the Wang Monochrome Monitor off your desk and allows you to swing it into position when you need it.

1.2.1 The Keyboard

You use the keyboard, shown in Figure 1-4, to communicate with your computer system. You give instructions to the computer by typing in characters, numbers, text, programs, or special keyboard commands. There are 101 keys on the keyboard. When you use these keys in all of their various combinations, you generate a set of 224 characters. (Refer to Appendix D.) A 6-foot coiled cable attaches the keyboard to the electronics unit. The keyboard weighs only 4 1/2 pounds, so you can easily position it as you work.

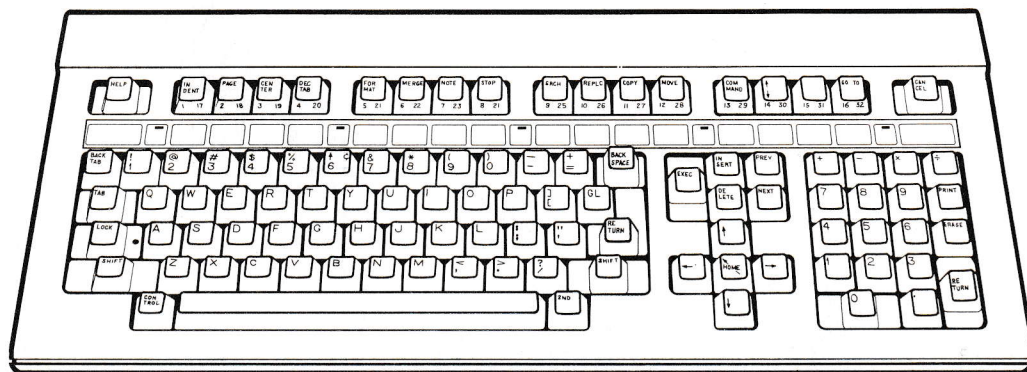


Figure 1-4. The Keyboard

Aside from the familiar typewriter keypad, your computer's keyboard has additional keypads and special keys. Chapter 6, Using the Keyboard, explains the function of each keypad and special key. In addition to the 101 keys, the keyboard has five red indicator lights (LEDs) built into it. Each time you turn on your system, a series of power-on diagnostic tests determine whether your system can start successfully. The LEDs are used to indicate the status of the system during these diagnostic tests. The tests run for approximately 15 seconds. If the tests detect no problems with your system, all of the LEDs go out and your system starts. If some of the lights remain on longer than 25 seconds, you should follow the procedures listed in Appendix B, System Diagnostics, to resolve the problem.

Inside the keyboard housing there is a 2-inch speaker that can be programmed to create up to three simultaneous tones. Sometimes these tones are used by the system to alert you to a problem. At other times, sounds provide helpful audio feedback. For example, each time you press a key, you hear a click that indicates that your computer accepts the particular keystrokes you have made. When you program in BASIC, you can use commands that generate sounds.

1.2.2 The Electronics Unit

The electronics unit is the central component in your system. It contains the microprocessor, memory, disk drives, expansion slots, System and option cards, power supply, and system clock. You connect all other Wang PC components to it. When you expand your system, you add an option card to the electronics unit. The electronics unit also contains all of the system's storage devices.

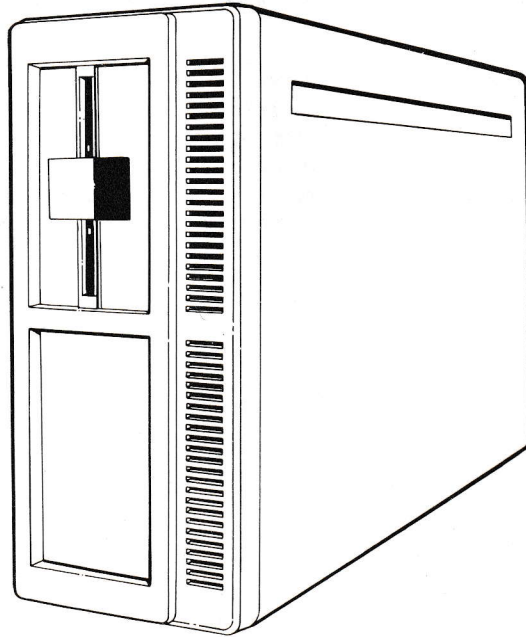


Figure 1-5. The Electronics Unit

The important parts of the electronics unit are as follows.

- System card
- disk drive(s)
- expansion slots

The following paragraphs discuss the function of each part. Appendix E, System Summary, contains a more technical description each one.

System Card: The System card is the circuit board in the electronics unit that contains the computer's main memory and main processing facilities. Figure 1-6 shows where the System card is located inside the electronics unit.

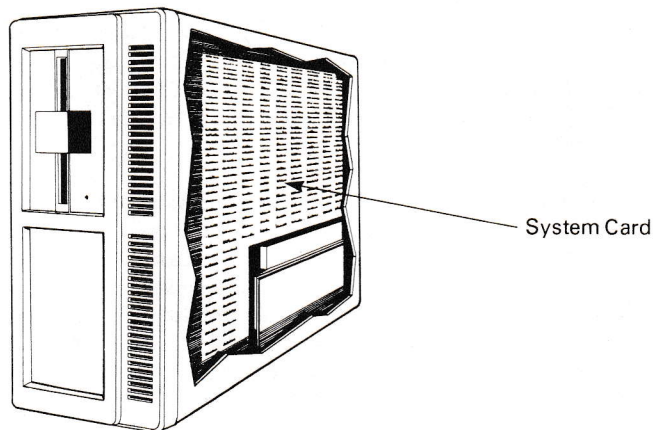


Figure 1-6. The System Card

Disk Drives: A disk drive is a device that allows you to store information electronically on a disk. Each disk drive contains a read/write recording head that functions much like the record and playback heads in a tape recorder. A disk drive's read/write head allows the computer to read information stored on a disk and transfer that information to main memory. The read/write head also enables the computer to write information stored in main memory onto a disk.

There are two types of drives that you can use in your Wang Professional Computer: a diskette drive and a Winchester disk drive. Your system could have a single diskette drive, two diskette drives, or a Winchester drive used in combination with a single diskette drive. (Refer to Figure 1-7.)

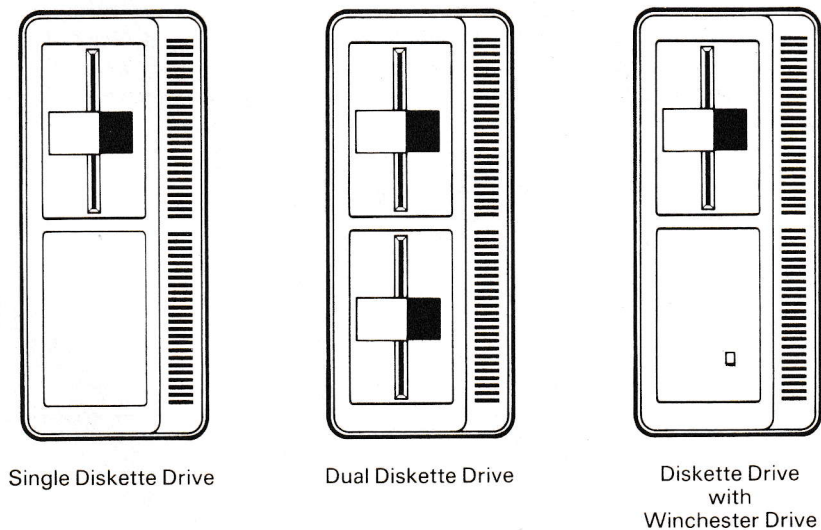


Figure 1-7. Disk Drive Configurations

The Diskette Drive: The diskette drive, shown in Figure 1-8, is an auxiliary storage device located in the electronics unit. The Wang PC diskette drives store information on 5 1/4-inch diskettes. Each Wang Professional Computer diskette stores 360,000 bytes (360KB) of information. In less technical terms, each diskette holds the equivalent of approximately 142 single-spaced typewritten pages.

When you want to store new information or retrieve previously stored information from a particular diskette, you insert the diskette into the diskette drive. Though each diskette has a limit to the amount of information it can hold, there is no limit to the number of diskettes you can create for use with your PC. Unlike the information in the computer's main memory, which "goes away" each time the computer is turned off, the information on diskette remains there until you modify or delete it. As a result, diskettes provide you with a means of permanently storing information.

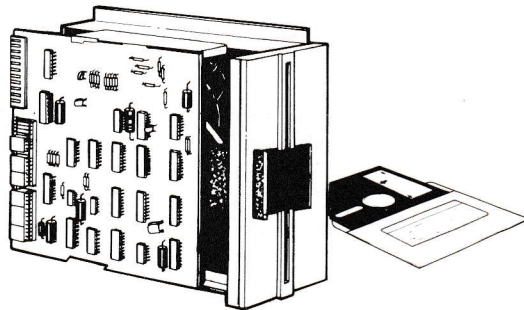


Figure 1-8. A Diskette Drive and Diskette

The Winchester Disk Drive: You have the option of having a Winchester disk drive installed in the electronics unit. The Winchester drive, shown in Figure 1-9, stores 10,000,000 bytes (10MB) on its 5 1/4-inch hard disk. This amount of storage represents more than 26 times the storage capacity of a single diskette. The Winchester disk stores the rough equivalent of 4,000 typewritten pages.

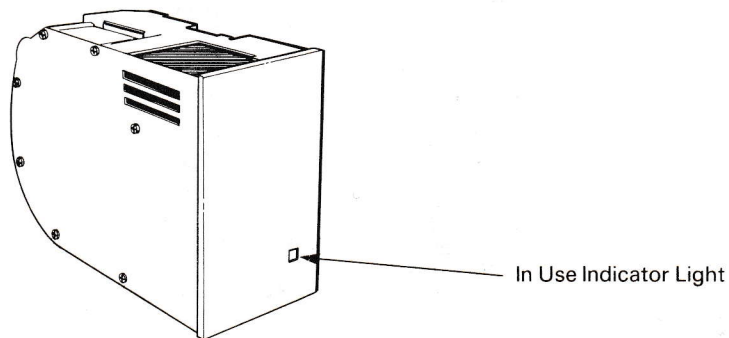


Figure 1-9. The Winchester Drive

The disk itself is sealed inside the Winchester drive. You do not replace or remove the Winchester disk from the drive at any time. If you fill up the 10MB of storage space on the Winchester disk, you can use various methods to create additional storage space. For example, if you copy a group of nonessential files from a full Winchester disk onto a diskette, you can then delete the nonessential files from the Winchester and free up some disk space.

Expansion Slots: The five expansion slots, located inside the electronics unit, accommodate the various option cards available on the Wang PC. (Refer to Figure 1-10.) The Wang PC is designed so that any card can fit into any expansion slot.

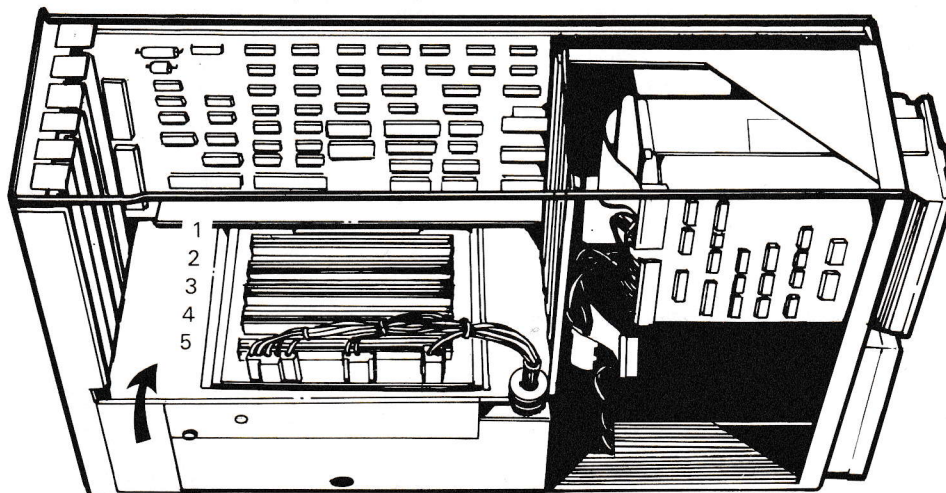


Figure 1-10. Expansion Slots

In addition to choosing a video card (which you must do if you purchased a Base Unit), you can add a variety of option cards to your system to increase its capabilities. Some of these option cards are:

- Memory Expansion card
- PC Remote Communications card
- PC Local Communications card
- PC CP/M-80 Emulation card
- Winchester Controller card

You can find complete descriptions of these options, along with installation instructions, in Chapter 9.

1.2.3 The Monitor

A monitor displays information. This information can be the information you type at the keyboard, or it can be the results that the computer displays after following a set of instructions contained in a piece of software. Most monitors contain a Cathode Ray Tube (CRT) -- a television-like vacuum tube with a luminescent screen.

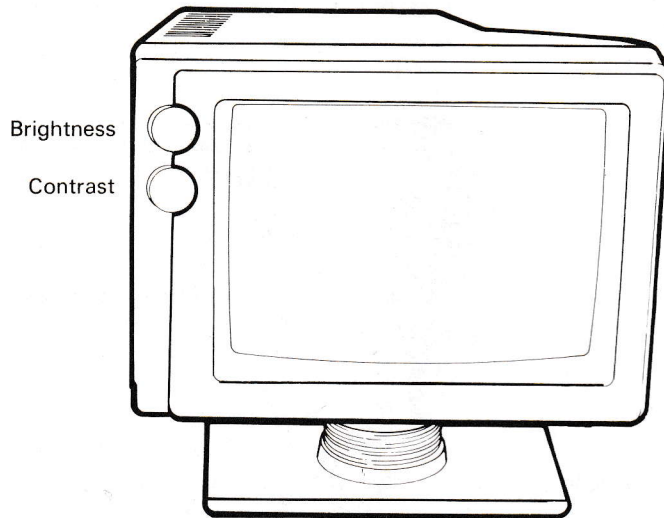


Figure 1-11. The Wang Monochrome Monitor

The Wang Monochrome Monitor displays green characters on a black background. It has a 12-inch screen, measured diagonally. The screen is coated with an anti-glare material that reduces eye fatigue. The monitor has a brightness knob and a contrast knob that allow you to adjust the appearance of the screen display. The standard monitor is on an adjustable pedestal base that lets you tilt the screen up or down. The Wang Monochrome Monitor is unique in that it can be attached to an optional arm which elevates it up to 14 inches off the desk surface, as illustrated in Figure 1-1. After you install the monitor on the arm, it is completely adjustable. You can tilt it forward or back and adjust it to face left or right. The arm is preset to swing in a 180-degree arc. However, you can set the arm to swing in only a 90-degree arc or in full circle.

You can use several different types of monitors with the Wang PC. Each monitor works in conjunction with a video card installed in one of the expansion slots within the electronics unit. A video card is a circuit board that allows a monitor to communicate with the System card. The following three types of video cards are available for the Wang PC.

Introduction

Wang Monochrome Monitor Card: You must install this card in the electronics unit before you connect the Wang Monochrome Monitor to your system. The Wang Monochrome Monitor card displays characters on a screen in an area 80 columns wide and 25 rows deep. In preconfigured systems, the Wang Monochrome Monitor card is already installed within the electronics unit.

Wang Graphics Card: You can use this card in conjunction with the Wang Monochrome Monitor card to add graphics capabilities to your system. You cannot use this card without the Wang Monochrome Monitor card. The Graphics card allows you to create monochrome graphics made up of tiny dots. These dots, also called pixels, are the smallest unit that can be displayed on a screen. The degree of graphic resolution of any given screen is measured in terms of the number of dots that screen can hold. The higher the resolution, the finer the level of detail you can create using the particular graphics capabilities. When you use the Wang Graphics Card, you can create graphics with an 800 x 300 dot resolution.

Industry-standard Monitor/Graphics Card: If you install this card, you can connect an RGB color monitor or a black-and-white monitor to your system. If your color monitor is connected to the industry-standard Monitor/Graphics card, you can simultaneously display up to 16 colors on the screen. The combination of a monitor and the industry-standard Monitor/Graphics card produces a 640 x 225 dot resolution.

1.2.4 The System Diskettes

System Diskettes I and II contain the programs, or sets of instructions, necessary to start and run your system. The programs on the System Diskettes are those supplied with all versions of the system. System Diskette I includes the operating system and the system utilities. System Diskette II includes interpretive BASIC and the Wang PC text editor. Appendix K contains a list of all files on both System Diskettes.

1.3 PREVENTING PROBLEMS

Your Wang PC system combines innovative design concepts with a comprehensive support strategy to give you a systematic way to deal with problems. You can use a wide range of self-help facilities when you have a problem, from the HELP key on the keyboard to the System Diagnostics diskette. The self-help facilities are designed to enable you, as much as possible, to discover the cause of a problem and solve it yourself.

If your system develops a problem that you can't solve, you can call the Wang Professional Computer Assistance Center for consultation. (Refer to Section 1.3.4.) The Assistance Center will attempt to determine the cause of your problem and tell you what to do next.

1.3.1 Menu-Driven System

In a menu-driven system, you select a program from a list of options, called a menu, that appears on the screen. The advantage of a menu-driven system is that you don't have to remember the names of the available functions or any complicated command syntax. To select a menu option, you use the space bar and the BACKSPACE key to move the acceptance block (■) next to the option you want to select. You then press the EXEC key to run your option. Figure 1-12 displays the Main System Menu.

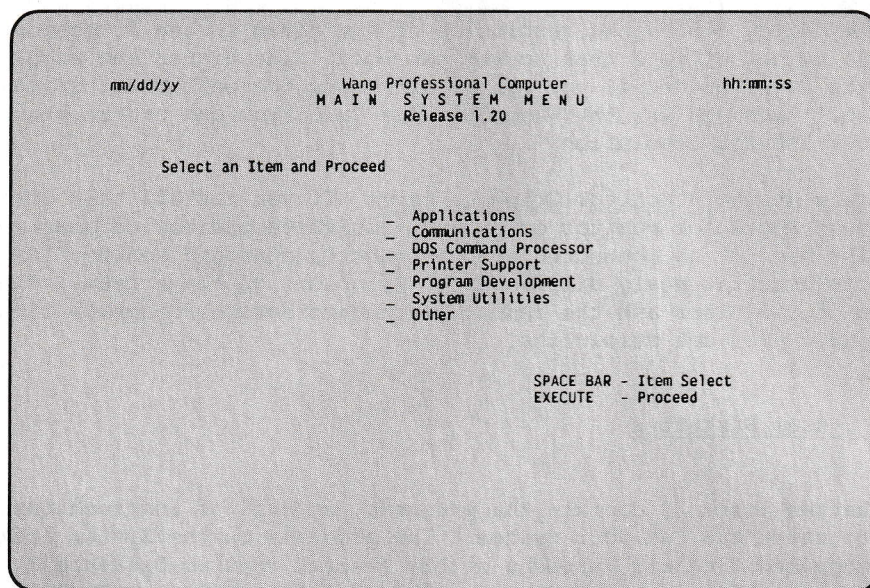


Figure 1-12. The Main System Menu

1.3.2 The HELP Key

You can receive assistance while using the Wang PC by pressing the HELP key. The type of information you receive depends upon the particular application you're using when you press HELP. For example, when you're in a PC Word Processing document, you can see a display of all of the Help screens available in PC Word Processing by simultaneously pressing SHIFT and HELP. When you decide which function you want information about, press HELP again. The prompt "Which Help?" appears on the screen. When you press the key that corresponds to the function you want to view, instructions describing the use of that function appear on the screen. Figure 1-13 shows the location of the HELP key on the keyboard, along with a sample Help display.

Use the SEARCH Key to:

1. Locate every occurrence of a specified character string from the beginning of a document or the current cursor position to the end of a document.
 - To search from the current cursor position press SRCH;
OR
From the beginning of the document, press SHIFT + SRCH.
 - At the prompt, enter the string of character that you want to find.
 - As the cursor stops at each occurrence of the string, perform any of the edit functions on it or press SRCH to find the next occurrence.
 - Each time you stop to edit an occurrence of the string, you must press SRCH and re-enter the string to find the next occurrence.

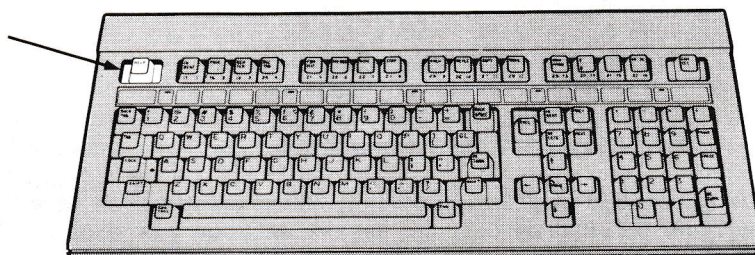


Figure 1-13. The HELP Key and Sample Display

1.3.3 The Manuals

Wang provides The Wang Professional Computer Documentation Guide as a comprehensive reference to the rest of the manuals in the set. You can turn to this book when you need to know which one of the manuals covers the topic you're interested in. The Documentation Guide includes a brief description of each manual, a general index, and a glossary. The Documentation Guide is the fastest way to find out where the information you need is located.

Each additional piece of software you buy, whether it's a language like COBOL or an application like PC Word Processing, has its own manual. Many software applications, including PC Word Processing and PC Multiplan, come with both a training and a reference manual.

1.3.4 Levels of Product Support (USA Only)

Wang has developed a comprehensive support plan to help you understand how to use the capabilities of your Professional Computer. Support services include everything from the toll-free telephone line to the Professional Computer Assistance Center to the range of service contracts you can purchase to protect your investment. The following paragraphs describe each of these services in detail.

Installation: You can arrange for a Wang Customer Engineer to install your system on a fixed-fee basis. The charge for this service applies regardless of any maintenance agreement you have purchased.

The Warranty: Under the terms of the 90-day warranty, you are entitled to service any time within the first 90 days after the date of delivery. Warranty repairs will be made when you mail the malfunctioning component to one of the three Wang Field Service Centers, located in Lawrence, MA, Atlanta, GA, and Marina Del Ray, CA. Before you can initiate a repair under the provisions of the warranty, your power-on diagnostic tests must indicate a defective device. You should then call the Wang Professional Computer Assistance Center at 1-800-343-1098 (617-459-5000 in Massachusetts, Alaska, and Hawaii) and give the diagnostic test results to the technical support personnel there. If the Assistance Center determines that you have a failed component, you will be asked to mail that component to the closest Field Service Center. This procedure covers any problems with the electronics unit, the keyboard, the Wang Monochrome Monitor, either of the Wang-supplied printers, and any other Wang-supplied system option or Wang-supplied diskettes.

If you have purchased the Special First Year Maintenance Contract, a Wang Customer Engineer will service your system at your place of business in the event that you encounter a problem after you unpack, connect, and install your equipment. There is no 90-day mail-in service during the warranty period under the terms of this contract.

If you do not have a First Year Maintenance Contract and your system develops a problem after the 90-day warranty period expires, you can either purchase a service plan or pay on a fixed-fee basis for any additional repairs.

The Wang Professional Computer Assistance Center: The Wang PC Assistance Center, located in Lowell, Massachusetts, supports a toll-free phone line from 8:30 am to 5:30 pm, Monday through Friday, Eastern time. By calling 1-800-343-1098 from anywhere in the United States, Puerto Rico, or the Virgin Islands (in Massachusetts, Alaska and Hawaii, call 617-459-5000 and ask to be connected to the Professional Computer Assistance Center), you can receive answers to questions about any Wang-provided application, utility, language, or operating system.

The Assistance Center can help solve any problems that develop while you are unpacking, assembling, connecting, or using your system. Of course, before you call the Assistance Center, you should try to solve the problem yourself using the various self-help resources available with your system. However, if your power-on diagnostics tests indicate a problem, call the Assistance Center for an evaluation of the tests. This evaluation will determine if a repair is necessary and what you should do if it is. The recommended procedure for using the services of the Assistance Center is outlined at the beginning of Appendix B, System Diagnostics.

On-site Maintenance Contracts: If you wish to have Wang service your PC at your place of business, there are two alternatives for on-site maintenance.

If you have purchased Wang's Standard Maintenance Contract, a Wang Customer Engineer can make repairs at your office for a one-year period starting after the 90-day warranty period expires. This is a one-year, renewable agreement that includes in its price all parts, labor, and preventive maintenance on your Professional Computer.

If you purchased the Special First Year Maintenance Contract, a Wang Customer Engineer can make repairs at your place of business as soon as you complete the unpacking, connecting, and installation of your system. In all other respects this one-year renewable contract has the same conditions and features as the Standard Maintenance Contract.

Mail-in Maintenance Contract: Under the Mail-in Maintenance Contract, you must first report the results of the power-on diagnostics tests to the Assistance Center for evaluation. The Assistance Center then instructs you to mail the component to one of the three domestic Wang Field Service Centers. Upon receipt of the component, the Service Center either repairs or replaces the defective component and mails it back to you.

Wang repairs or replaces the component without charge if the Service Center determines that the component was defective in workmanship or material at the time of shipment. Of course, all replaced components become the property of Wang.

Wang repairs the component at your expense if the Service Center determines that the component was damaged because of improper installation, improper use, or any other cause for which Wang is not responsible. In all cases, Wang shall be the sole judge as to whether the component was damaged by improper use, or whether the equipment was defective at the time of delivery.

Mail-in Fixed-Fee: If equipment repairs are necessary after the 90-day warranty period expires and you have not purchased either maintenance contract, you can use the mail-in system described above for equipment repair on a per incident fixed-fee basis.

The Professional Computer Course: You can enroll in a detailed course to learn about the Wang PC. The course is conducted at the Wang Corporate Education Center in Burlington, Massachusetts. Contact the Corporate Education Center at 617-273-5280 for further details.

2

SETTING UP YOUR WANG PROFESSIONAL COMPUTER

Introduction
Unpacking the System
Final Unpacking Sequence
Connecting Your System
Base Unit Connection Procedure
Connecting the Keyboard
Connecting the Wang Monochrome Monitor
Turning on Your System
Positioning Your System
Installation Procedures for Optional Items

CHAPTER 2

SETTING UP YOUR WANG PROFESSIONAL COMPUTER

2.1 INTRODUCTION

This chapter tells you how to unpack and connect your Wang Professional Computer system. Sections 2.1 through 2.3 describe how to unpack and position your system. If you have already unpacked your system, you can proceed directly to Section 2.4. Sections 2.4 through 2.9 tell you how to connect the three basic components of the Wang PC (the monitor, keyboard, and electronics unit).

Figure 2-1 shows the boxes you must unpack before you can connect your Wang Professional Computer. These boxes are:

- The "open me first" box (shown open in Figure 2-1). The important elements contained in this box include
 - The Wang Professional Computer Software License Agreement
 - The Wang Professional Computer Registration Card
 - System Diskettes I and II
 - the System Diagnostics diskette
 - two blank diskettes
 - write-protect tabs for the diskettes
 - disk drive labels (A, B, and C)
 - six rubber feet for the electronics unit
 - a Wang Supplies Catalog
 - The Wang Professional Computer Documentation Guide
 - The Wang Professional Computer Introductory Guide
 - The Wang Professional Computer BASIC Language Guide
 - The Wang Professional Computer Utility Programs User Guide
- The keyboard box. This box contains the Wang PC keyboard; its 6-foot coiled cable is attached to the keyboard.
- The electronics unit box. This box contains the Wang PC electronics unit. The system's main power cord and the Wang Monochrome Monitor cable are also packaged in this box. (You receive this cable even if you did not purchase the Wang Monochrome Monitor.)
- The monitor box. This box contains your monitor. If you purchased the Wang Monochrome Monitor, you have the box shown in Figure 2-1. Otherwise, you have a different monitor box.

Setting Up your Wang Professional Computer

If you did not receive a particular part, call your local Wang representative. Do not unpack any other boxes until you unpack and test the keyboard, the electronics unit, and the monitor.

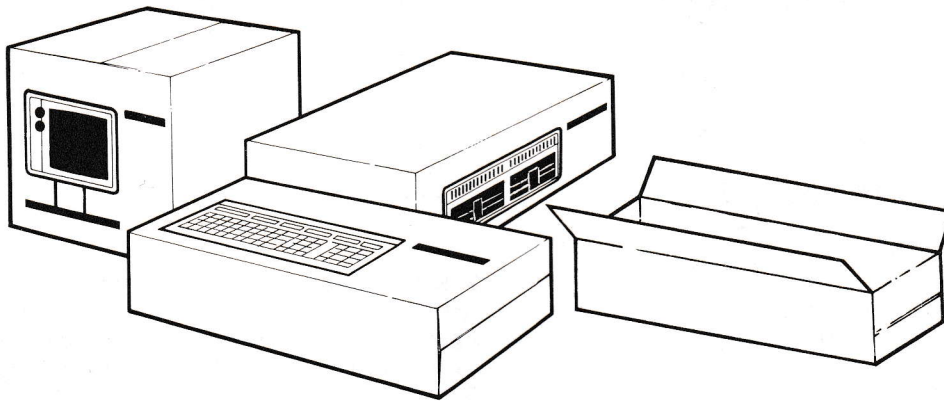


Figure 2-1. The Wang Professional Computer Fully Packaged

2.2 UNPACKING THE SYSTEM

Use the following steps to unpack your equipment so it will be correctly positioned for making the connections described later in this chapter:

STEP 1: Remove the keyboard from its box. Position it on your desk as shown in Figure 2-2.

STEP 2: Position the electronics unit box on its side, as shown in Figure 2-1. Slide the electronics unit out of the box.

STEP 3: Peel the adhesive backing off the rubber feet (found in the "open me first" box). Attach the rubber feet to the bottom or the left side (the side adjacent to the Wang logo) of the electronics unit, depending on the way you want to position the unit.

STEP 4: Position the electronics unit on your desk so that the back panel (the side with the fan and the red power switch) is facing you, as shown in Figure 2-2.

STEP 5: Take the envelope containing the power cord and the monitor cable out of the box. Remove the power cord and the monitor cable and place them on the desk.

STEP 6: Take your Wang Monochrome Monitor out of its box. Position it on your desk as shown in Figure 2-2.

Setting Up your Wang Professional Computer

NOTE:

If you are using a monitor other than the Wang Monochrome Monitor with your system, position it as instructed and then install the industry-standard Monitor/Graphics card. (Refer to Section 9.2.)

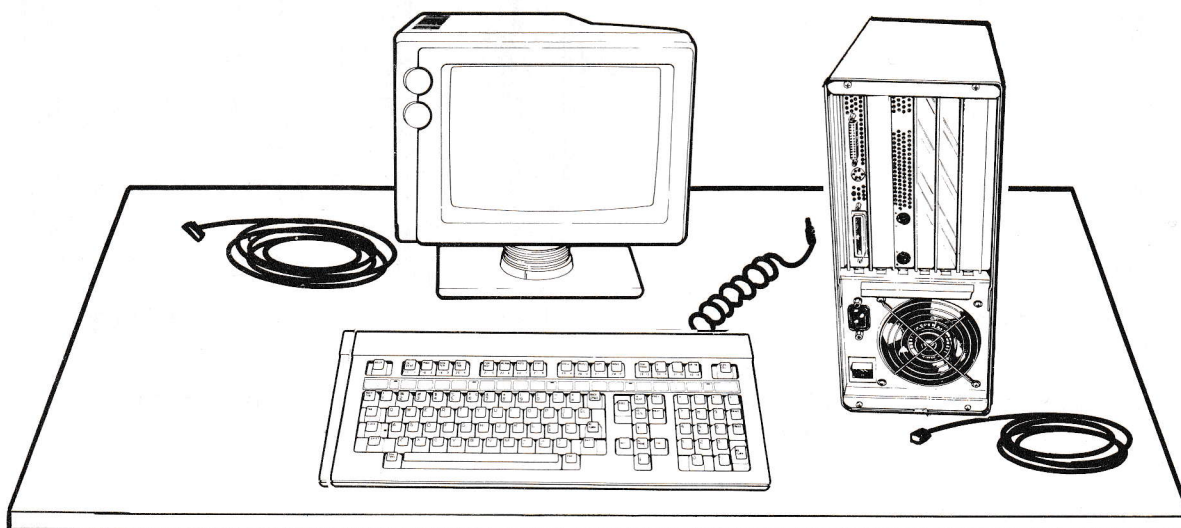


Figure 2-2. The Wang PC Unpacked

2.3 FINAL UNPACKING SEQUENCE

Perform the following steps to finish unpacking your PC. After you have finished unpacking, you will be ready to connect your system.

STEP 1: Remove the diskette drive shipping protector. To properly remove it from each diskette drive, do the following:

- A) Put one finger under the diskette drive door and pull it open. You will find a piece of cardboard inside the diskette drive. This is the shipping protector.
- B) Grasp the tab of the protector and pull it out of the drive as shown in Figure 2-3. Store the shipping protector with the other packing materials in the electronics unit box.
- C) If your Wang PC has two diskette drives, remove the shipping protector from the other drive.

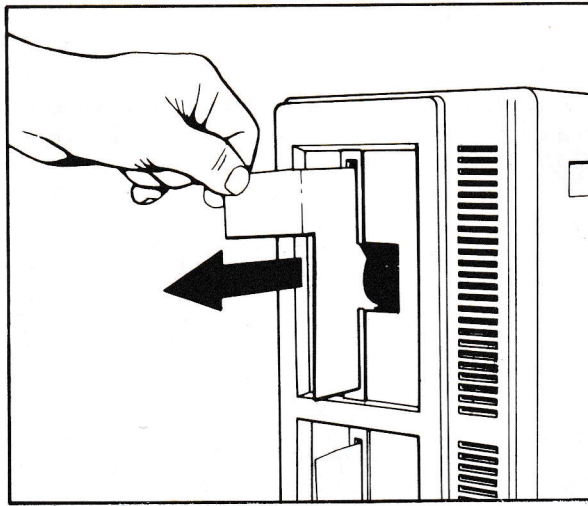


Figure 2-3. Removing the Shipping Protector From the Diskette Drive

STEP 2: Check the line voltage setting in your office. Your Wang PC has been preset at the factory for operation at 115 VAC.

CAUTION:

If you will be operating your Wang PC at a line voltage of 230 VAC, you must change the voltage setting. Appendix H tells you how to make this change.

STEP 3: If your PC has a voltage setting label covering the power switch on the rear of the electronics unit (as shown in Figure 2-4), you must remove it before you can use your PC.

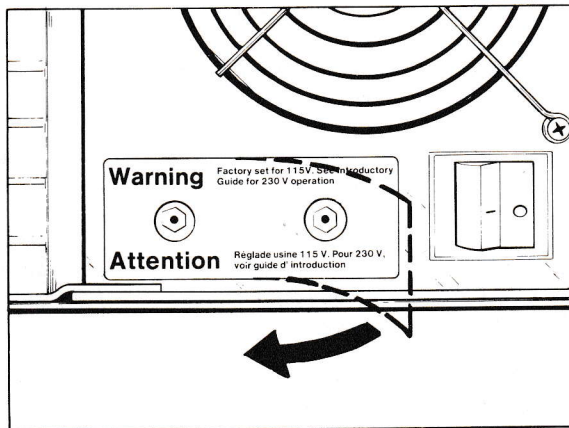


Figure 2-4. Removing the Voltage Setting Label

Setting Up your Wang Professional Computer

STEP 4: Find the disk drive labels in the "open me first" box and place them as illustrated in Figure 2-5.

NOTE:

If your system has a Winchester drive, label it Drive C.

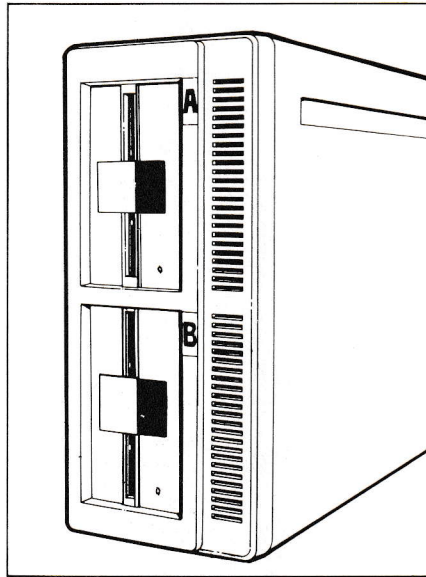


Figure 2-5. Labeling Your Diskette Drive(s)

2.4 CONNECTING YOUR SYSTEM

Your Wang Professional Computer system is easy to set up. The only tool you need to connect your system is a 1/4-inch flat blade screwdriver. There are three connections you have to make. You need to connect:

1. the keyboard to the electronics unit
2. the monitor to the electronics unit
3. the electronics unit to an AC power outlet

Before you begin to connect your system, check to be sure that the materials you've unpacked are positioned on your desk as illustrated in Figure 2-2. The back panel of the electronics unit should be facing you.

NOTE:

If your system does not look like the one shown in Figure 2-2, be sure to read Section 2.5, Base Unit Connection Procedure.

2.5 BASE UNIT CONNECTION PROCEDURE

If you purchased a Base Unit, you must install a video card in the electronics unit before you can connect your system. Chapter 9 tells you how to install your video card. If you are unsure whether or not you have a Base Unit, compare the back panel of your electronics unit with the one shown in Figure 2-6.

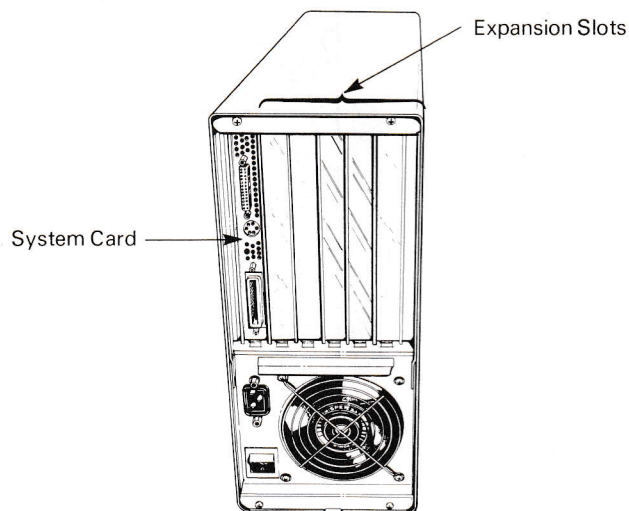


Figure 2-6. The Base Unit's Back Panel

Before you can use a monitor other than the Wang Monochrome Monitor with a Base Unit, you must install the industry-standard Monitor/Graphics card inside your electronics unit. Chapter 9 explains how to install this card. You must also connect your monitor to the connectors on the back of the Monitor/Graphics card. (Refer to Chapter 10.)

If you do not have a Base Unit, then you have a preconfigured system with a video card already installed in the electronics unit. You can confirm this by checking to see if one or more of the expansion slot panels on your electronics unit has a set of perforations and/or connectors as shown in Figure 2-2. These perforations and connectors indicate expansion slots where a card is already installed. If this is the case, you should continue to follow the directions in this chapter in order to connect your system.

2.6 CONNECTING THE KEYBOARD

Follow these steps to connect your keyboard to the electronics unit.

STEP 1: Find the keyboard connector on the back panel of your electronics unit. Figure 2-7 shows the location of the keyboard connector and the other important connectors.

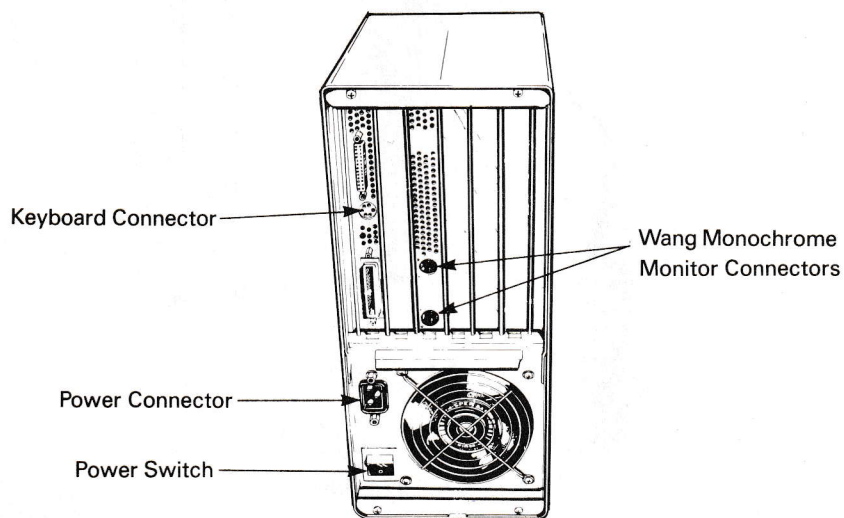


Figure 2-7. The Back Panel of a Preconfigured Unit

STEP 2: Connect the plug on the end of the keyboard cable to the keyboard connector located on the back panel, as shown in Figure 2-8. Align the pins in the plug with the holes in the keyboard connector.

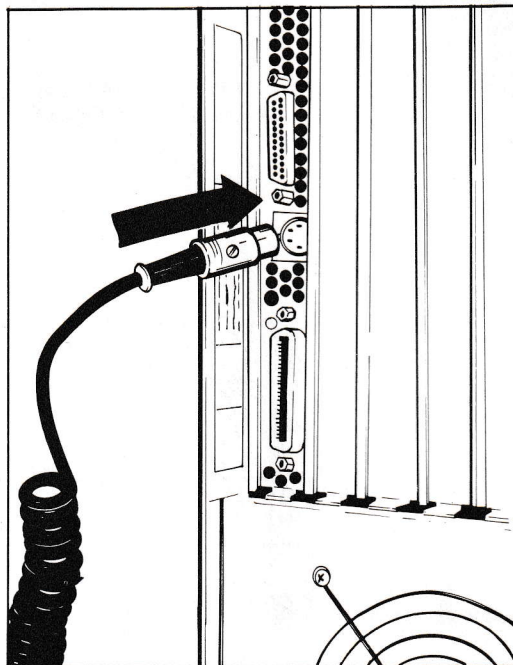


Figure 2-8. Connecting the Keyboard Cable

2.7 CONNECTING THE WANG MONOCHROME MONITOR

To connect the Wang Monochrome Monitor to the electronics unit, you must connect the monitor cable to the connectors on the underside of the monitor and to the connectors on the electronics unit. The ends of the cable are identical. Each end has one three-pin connector to carry power and one eight-pin connector to carry the video signals. You can attach either end of this cable to the electronics unit or the monitor. The Wang Monochrome Monitor card has two connectors on it, as shown in Figure 2-9. (This card may be located in an expansion slot other than the slot shown above.) The top connector is the eight-pin video connector, and the bottom connector is the three-pin power connector. To aid you in making these connections, the power cable and its corresponding socket have been labelled with a plus sign (+), and the video cable and its corresponding socket have been labelled with a triangle (▽).

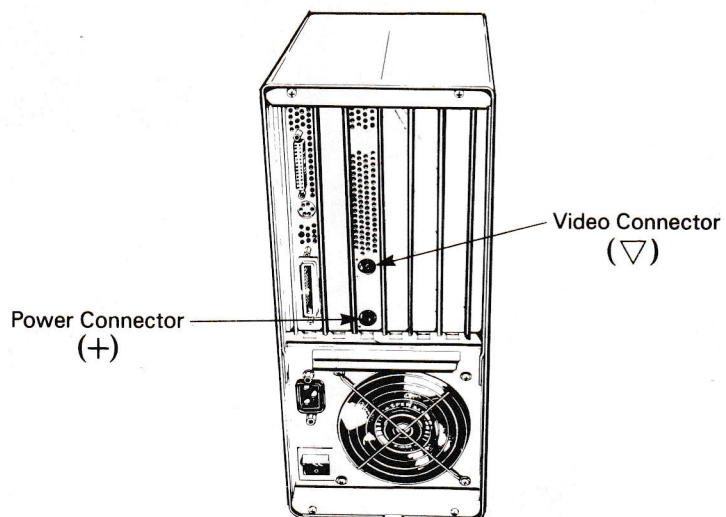


Figure 2-9. The Wang Monochrome Monitor Card Connectors

NOTE:

If your electronics unit does not have the two Wang Monochrome Monitor connectors on its back panel, you probably have a Base Unit. Section 2.5 explains what you should do next.

Use the following procedure to connect the Wang Monochrome Monitor.

STEP 1: Turn your monitor upside down, as shown in Figure 2-10. Note the position of the power and video connectors on the underside of the monitor.

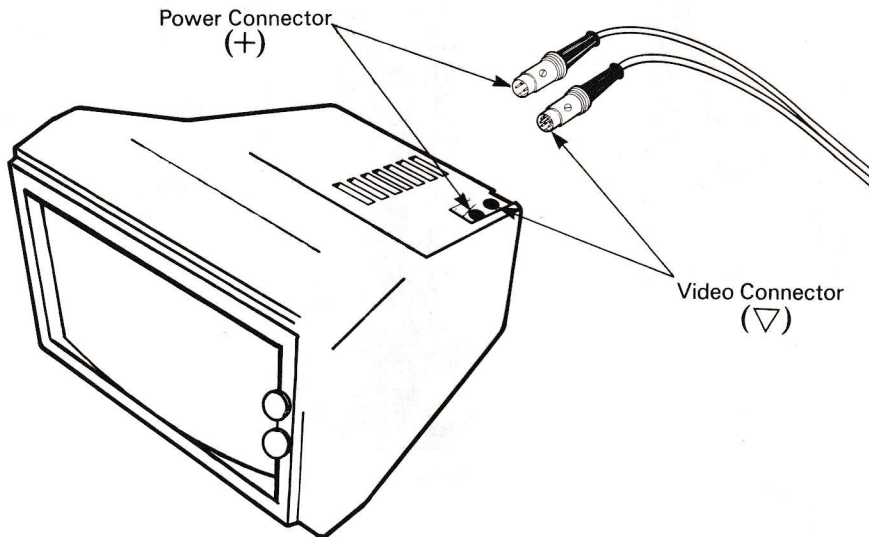


Figure 2-10. The Wang Monochrome Monitor Connections

STEP 2: Pick up either end of the monitor cable. Align the pins in the eight-pin video connector with the eight-pin socket on the underside of the monitor, as shown in Figure 2-10. Push the cable connector into the socket. If you have trouble making this connection, turn the connector slowly on the socket until the pins drop into place.

STEP 3: Use the same procedure described above to connect the three-pin power connector to the power socket on the monitor.

STEP 4: Take the free end of the monitor cable and attach the two remaining connectors to the sockets on the back panel of the electronics unit. Connect the eight-pin video connector to the top socket, as shown in Figure 2-11. Connect the three-pin power connector to the bottom socket. Turn the monitor right side up on your desk with the screen facing you.

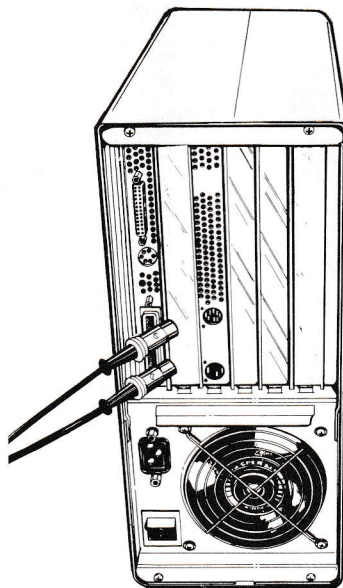


Figure 2-11. Completing the Wang Monochrome Monitor Connections

Your Wang Monochrome Monitor and keyboard are now connected to the electronics unit. The power switch located on the electronics unit controls the power sent to all three of these system components. As a result, whenever you turn on the electronics unit, you also turn on the monitor and the keyboard.

2.8 TURNING ON YOUR SYSTEM

Follow this series of steps to connect the main power cord and turn on your system.

STEP 1: Locate the main power cord. It was packed in the box that contained the electronics unit.

STEP 2: Connect the power cord to the three-holed socket located on the back panel of the electronics unit. Figure 2-7 shows the exact location of the socket.

Setting Up your Wang Professional Computer

STEP 3: Secure the power cord to the back panel by screwing the two round-head screws into the posts on either side of the power cord connector. Refer to Figure 2-12.

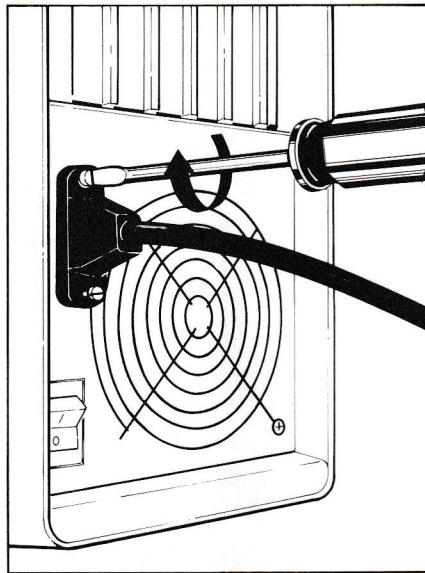


Figure 2-12. Securing the Power Cord

STEP 4: Turn off the red power switch. (The 0 should be flush with the back panel, as shown in Figure 2-12.)

STEP 5: Plug the free end of the power cord into an AC power outlet.

CAUTION:

Make sure that you have removed the shipping protector(s) from your diskette drive(s) before you turn on your system. Refer to Section\2.3 for instructions on how to remove the shipping protector.

STEP 6: Turn on the power switch. (The 1 should be flush with the back panel.)

Your computer system is now on. Each time you turn on the system, the computer runs its power-on diagnostic tests. While the tests are running, the five LEDs on the keyboard light up. If your system is operating correctly, all of the LEDs go off after approximately 15 seconds, and the message in Figure 2-13 appears on the screen:

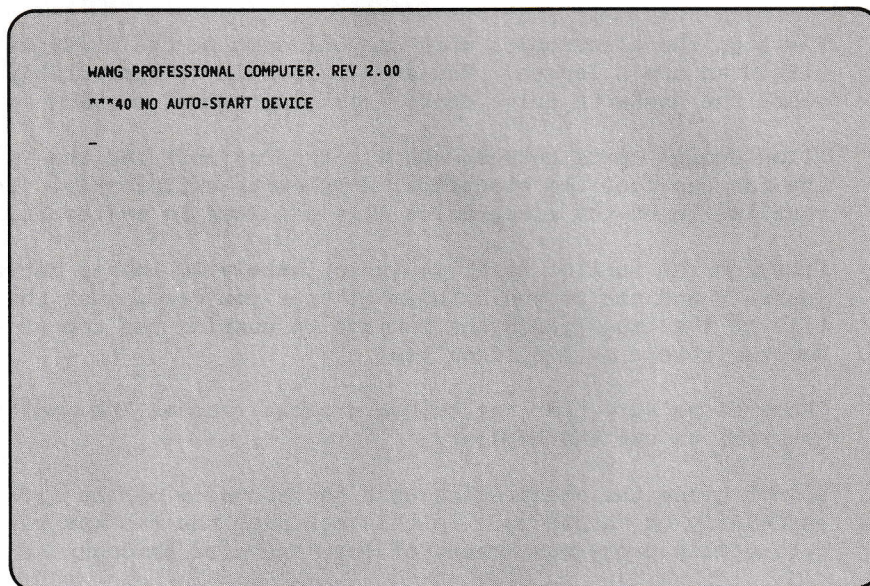


Figure 2-13. The Non-Start Display

This message appears if you try to start the system with Drive A's door open. If you try to start your system with Drive A closed but without loading System Diskette I, the screen may display the following message.

```
***41 START FAILED
    72 DRIVE A NOT READY
```

These messages do not indicate that there is a problem with your system; they merely indicate that you did not insert System Diskette I in Drive A before you tried to start the system.

NOTE:

If any of the LEDs remain on for longer than 30 seconds, or if any messages other than the two shown above appear on the screen, there is probably a problem with one of your components. You should turn to Appendix B, System Diagnostics, for instructions on what to do next.

2.9 POSITIONING YOUR SYSTEM

Before you begin to use your system, turn it off and take a few minutes to set it up on your desk. Consider the following guidelines as you position the system components in your work area:

- Position the electronics unit on your desk so the diskette drive is within an arm's length. You should be able to comfortably open and close the diskette drive doors from your normal working position.
- Allow enough space between the electronics unit and the wall so that the fan can cool the electrical components efficiently. Inadequate ventilation of the electronics unit can lead to system failure.
- Position the monitor to allow approximately 20 inches between yourself and the screen. Remember that you can adjust the degree of tilt of the Wang Monochrome Monitor by pushing the top of the monitor toward or away from you.
- Check to be sure that the keyboard cable reaches the positions where you want to use the keyboard.
- Do not place the electronics unit horizontally on the floor, especially on carpeting. In this position the fan can circulate a potentially dangerous amount of dust and dirt through the unit.

Figure 2-14 shows four possible ways to arrange the components of the Wang Professional Computer.

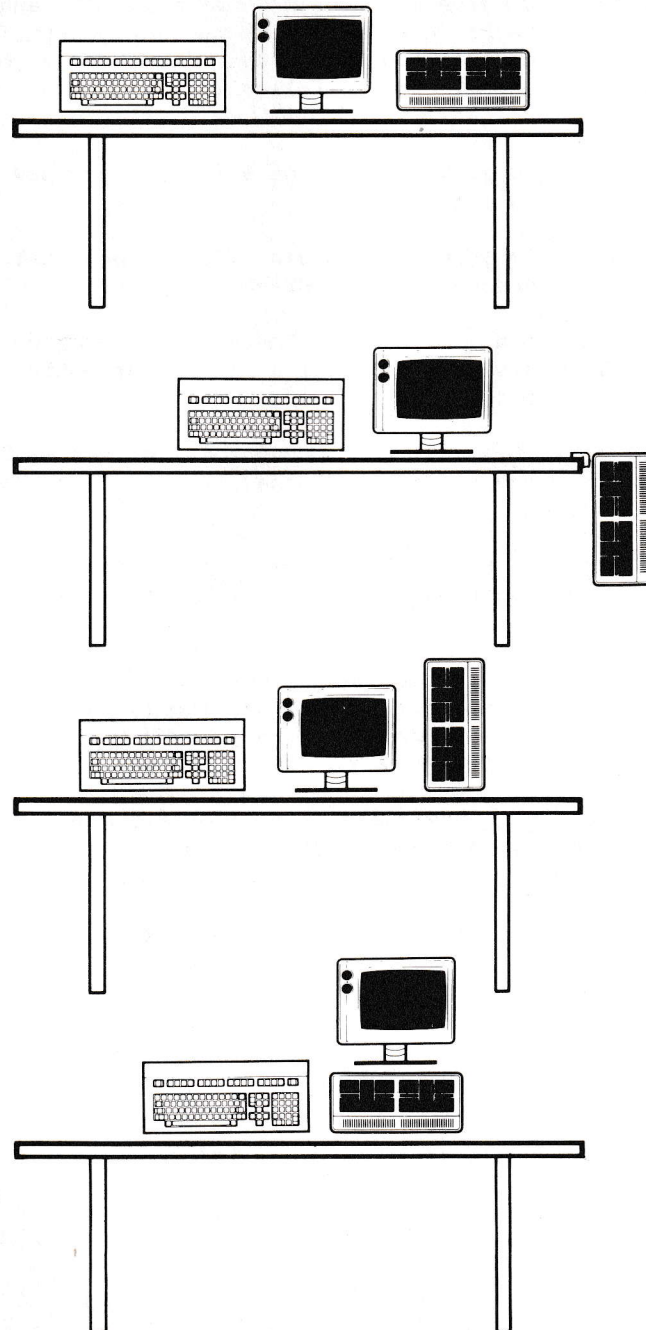


Figure 2-14. Suggested Wang PC Configurations

Setting Up your Wang Professional Computer

2.10 INSTALLATION PROCEDURES FOR OPTIONAL ITEMS

The preceding sections provide instructions for unpacking and connecting the basic components of the Wang PC (electronics unit, keyboard, and Wang Monochrome Monitor). The sections that provide procedures for unpacking and connecting your optional items are as follows:

- Winchester disk drive -- Section 9.3 tells you how to install the Winchester disk drive.
- Second diskette drive -- Section 9.4 provides instructions for installing a second diskette drive.
- Cards -- Section 9.2 provides installation procedures for option cards. If you plan to install a Winchester controller card, you should read Section 9.3.1 first.
- Monitor other than the Wang Monochrome Monitor -- Section 10.1 tells you how to connect a monitor other than the Wang Monochrome Monitor to your system.
- Monitor arm -- Section 10.2 gives instructions for assembling the monitor arm. Section 10.3 explains how to attach the assembled monitor arm to your desk.
- Printers -- Your printer manual contains unpacking and connecting procedures. In addition, you must also install a device driver before you can use a printer with your Wang PC. Appendix I tells you how to install a Wang PC device driver.
- Electronics unit desk clamp -- Section 9.5 explains how to install the electronics unit on the desk clamp.

3

GETTING ACQUAINTED WITH YOUR WANG PROFESSIONAL COMPUTER

Starting Your System

Finding Out What Files Are on a Diskette

Restarting Your System

Formatting a Diskette

Backing Up Your Diskettes

Loading an Application

Error Messages

CHAPTER 3

GETTING ACQUAINTED WITH YOUR WANG PROFESSIONAL COMPUTER

Once you have unpacked, connected, and positioned your Wang PC, you are ready to begin working with it. The following sections provide procedures for several common tasks you can perform on your Wang PC that will help to familiarize you with your system.

3.1 STARTING YOUR SYSTEM

Before you start your system, make sure that the power switch on the electronics unit is turned off. (The 0 on the switch should be flush with the back panel.) Use the following series of steps to start your system:

STEP 1: Place one finger under the door to Drive A and pull it open.
(Refer to Figure 3-1.)

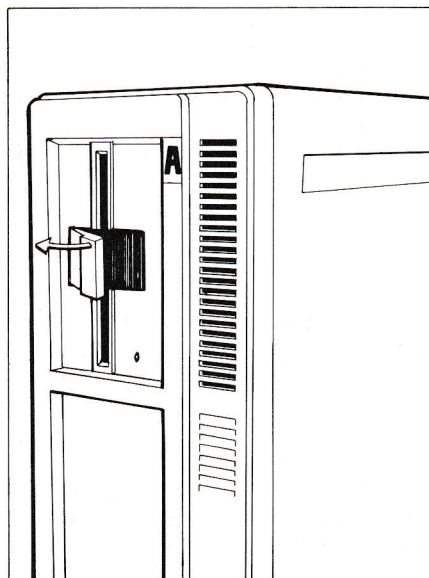


Figure 3-1. Opening the Door to Drive A

If there is still any packing material in your drive, remove it. (Refer to Section 2.3.)

STEP 2: Turn on the power switch.

STEP 3: Grasp System Diskette I (located in the same box in which you found this manual) as shown in Figure 3-2, and slip it into the slot in Drive A. Use the Insert and Up arrows on the label to confirm that the position of the diskette is correct as you insert it in the drive.

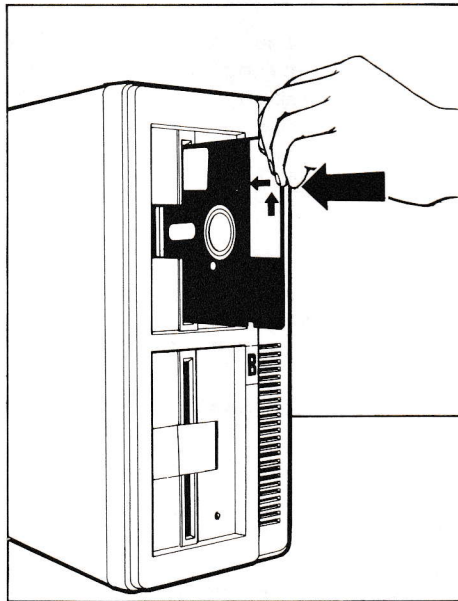


Figure 3-2. Inserting a Diskette

STEP 4: Close Drive A's door.

Nothing appears on the screen for the first 15 seconds after you turn on the switch. However, all five LEDs on the keyboard light up to signal that the power-on diagnostic tests are under way. After the diagnostics finish, all of the LEDs go out and the Start-up screen (refer to Figure 3-3) appears.

NOTE:

If any of your LEDs remain lit after about 25 seconds, you have a problem with your system. If this is the case, refer to Appendix B for instructions on how to use the System Diagnostics diskette.

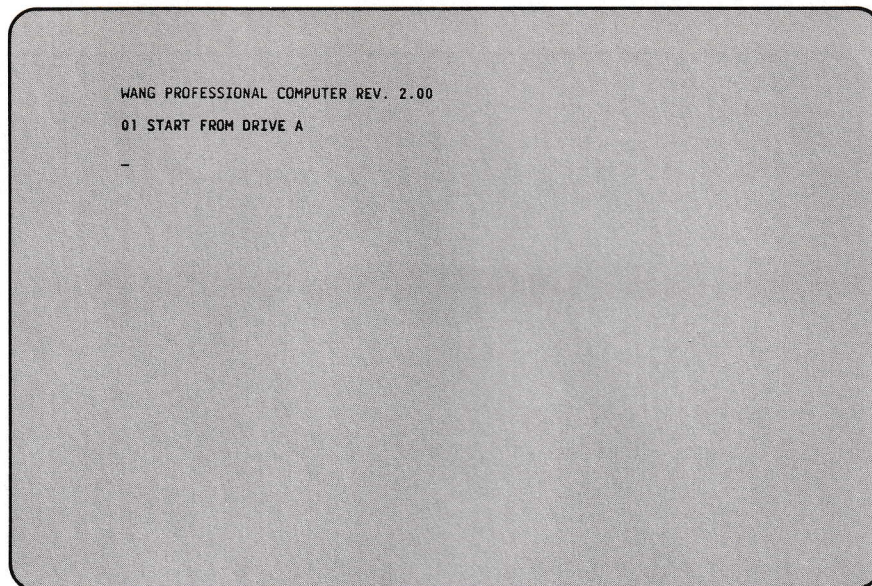


Figure 3-3. Sample Start-up Screen

NOTE:

If you have version 1.00 of the start PROM, the following messages appear on this screen:

```
WANG PROFESSIONAL COMPUTER. REV 1.00.  
01 WILL START FROM DRIVE A  
02 STARTING FROM DRIVE A
```

The Start-up screen appears automatically every time you start your system. The Start-up display indicates the status of your system. It also informs you if any system devices, such as diskette drives, are defective. If your system passes the power-on diagnostics, you should see a Start-up display similar to the one shown in Figure 3-3. The display indicates the device your system will start from.

NOTE:

Drive A is the start-up default drive. The system assumes that you will start from Drive A unless you change the default. Appendix G tells you how to change the start-up default drive.

Five seconds after the Start-up screen appears, the system displays the Date and Time screen shown in Figure 3-4.

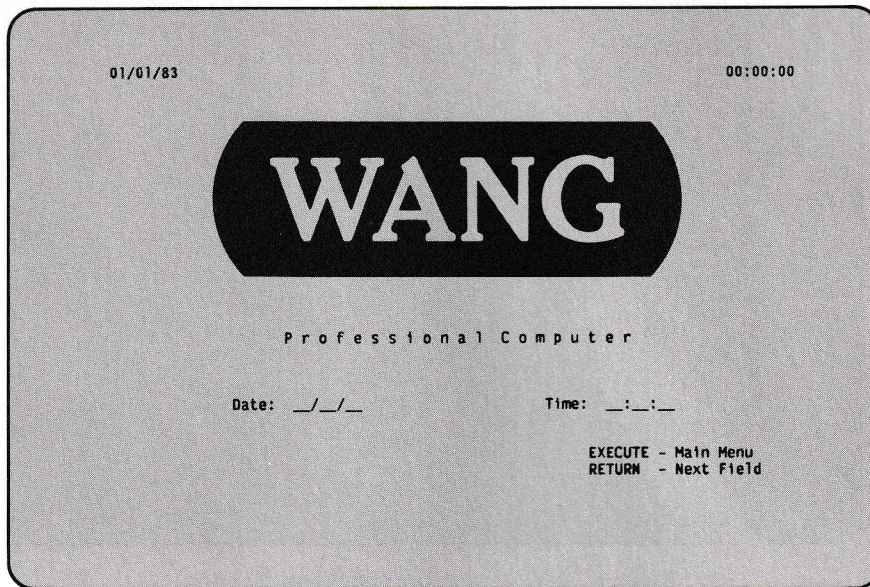


Figure 3-4. The Date and Time Display

When the display in Figure 3-4 appears, you have the option of entering the current date and time. If you choose to do this, simply type in the information; the system provides the correct format. You can get a further explanation of how to set the date and time by pressing the HELP key. When you are ready to continue, press EXEC to proceed to the Main System Menu shown in Figure 3-5. For a detailed explanation of the Main System Menu, read Chapter 7.

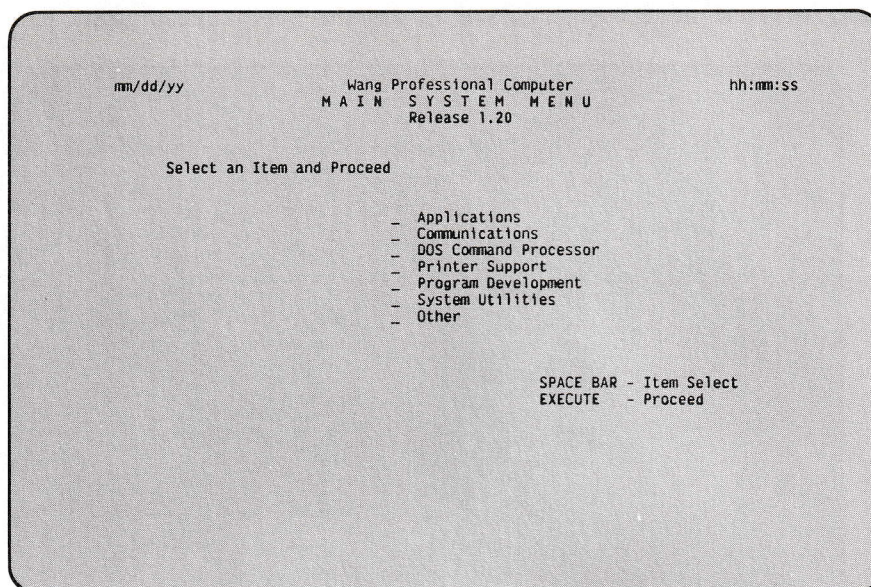


Figure 3-5. The Main System Menu Display

Remove System Diskette I from Drive A. Notice that the Main System Menu remains on the screen. That happens because when the system starts, it loads the menu program into main memory. When you remove the diskette, all of the programs loaded into memory remain there until you either delete them, turn off the power, or restart the system.

3.2 FINDING OUT WHAT FILES ARE ON A DISKETTE

Each Wang PC diskette contains a disk directory. A disk directory is a file that lists all the files on the diskette. The disk directory also records each file's size (in bytes), and the date and time when the file was last updated. This eliminates the need for you to maintain records of what files are on a particular diskette. To view the current directory of System Diskette I, follow these steps.

STEP 1: Start your system by following the procedures in Section 3.1 if you have not already done so.

STEP 2: When the Main System Menu appears, press the space bar to position the acceptance block next to the System Utilities option. Press EXEC. The System Utilities Menu appears on the screen.

STEP 3: Use the space bar to position the acceptance block next to the DIRECTORY DISPLAY utility, as shown in Figure 3-6. Press EXEC.

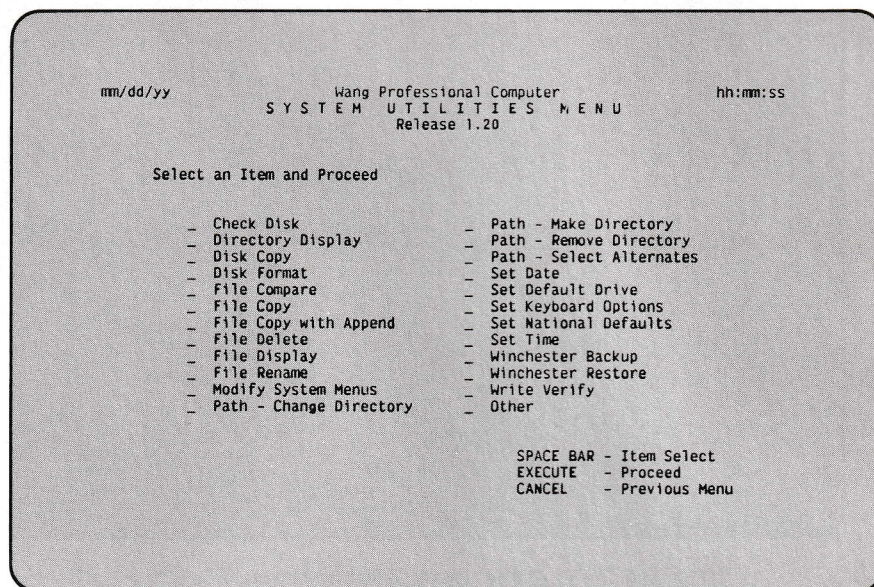
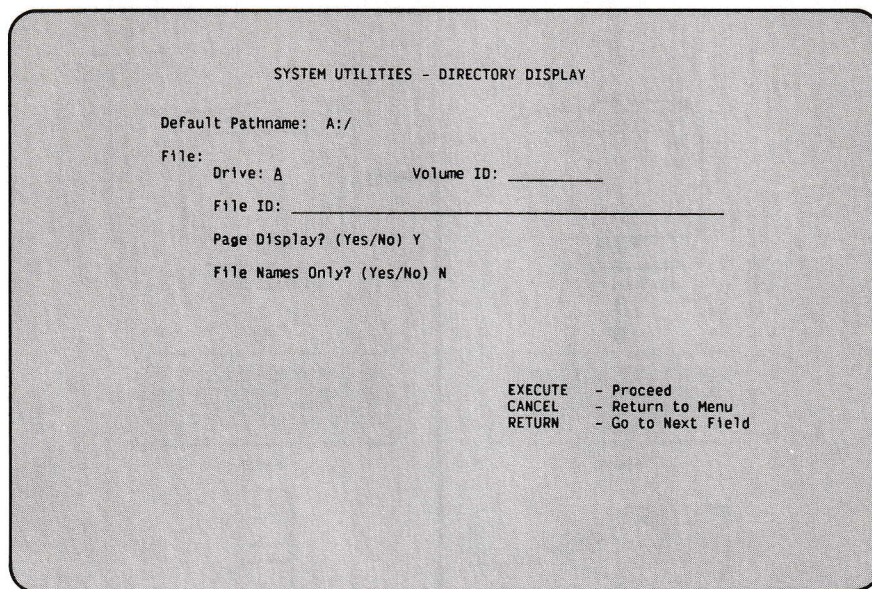


Figure 3-6. System Utilities Menu

STEP 4: When the display shown in Figure 3-7 appears on your screen, press EXEC again. The current disk directory of System Diskette I appears on the screen.



```

SYSTEM UTILITIES - DIRECTORY DISPLAY

Default Pathname: A:/

File:
  Drive: A           Volume ID: _____
  File ID: _____
  Page Display? (Yes/No) Y
  File Names Only? (Yes/No) N

EXECUTE - Proceed
CANCEL  - Return to Menu
RETURN  - Go to Next Field

```

Figure 3-7. DIRECTORY DISPLAY Utility Screen

For a more detailed explanation of how to use the DIRECTORY DISPLAY utility, refer to The Wang Professional Computer Utility Programs User Guide.

3.3 RESTARTING YOUR SYSTEM

When the system will not let you proceed with your work (for example, you try to execute a program and nothing happens), you need to restart your system. To do this, make sure that System Diskette I is in the start-up default drive, as explained in Section 3.1. Then, perform one of the following procedures:

- Turn the power switch in back of the electronics unit off, wait five seconds, and turn it on again. This procedure is known as a "cold start."

- Press 2ND and COMMAND simultaneously, and then press CANCEL. (Refer to Chapter 6 if you cannot find these keys.) This restart procedure is known as a "warm start." Figure 3-8 demonstrates how to use the warm start key sequence.

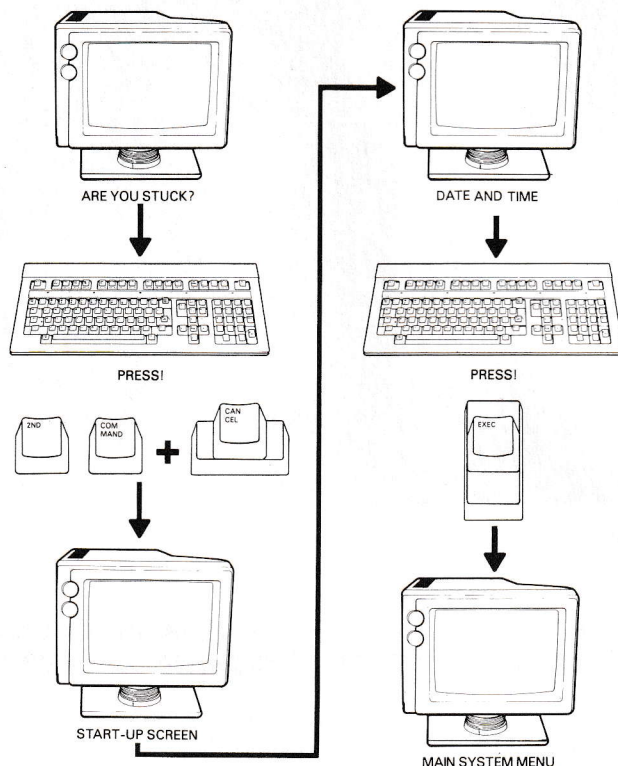


Figure 3-8. Warm Start Key Sequence

When you restart your system, you should use the warm start instead of the cold start if possible. A warm start takes you directly to the Start-up display shown in Figure 3-3. After a cold start, the system must run its power-on diagnostic tests before the Start-up display appears. For this reason, a warm start is about 15 seconds faster than a cold start. However, there are times when the warm start will not work; for example, if you have tried to start your system with a diskette that does not contain the system files and the message: *****41 START FAILED** appears. If the warm start does not work, you must restart your system using the cold start technique.

After you restart your system, you must reload the files you were working with before you can continue with your work.

3.4 FORMATTING A DISKETTE

A blank diskette is not like a blank cassette tape. You cannot put a new one in a diskette drive and write information onto it. If you try to, the system displays the message: ***41 START FAILED. You must format a diskette before you can use it. The formatting process organizes the diskette so that it can accept information by establishing how much information the diskette can hold, determining where it will be stored, and setting up the disk directory described in Section 3.2. Use the following steps to format a diskette.

NOTE:

If you format a full or partially full diskette instead of a blank one, the formatting procedure erases any files already on that diskette before it begins to format.

STEP 1: Start your system if you have not already done so. (Refer to Section 3.1.)

STEP 2: Position the acceptance block on the Main System Menu next to the System Utilities option. Press EXEC. The System Utilities menu shown in Figure 3-6 appears on the screen.

STEP 3: Position the acceptance block next to the DISK FORMAT option. Insert System Diskette II in Drive B. Press EXEC. The following display appears:

```

SYSTEM UTILITIES - DISK FORMAT

Drive: A

Define Disk Storage Capacity

_ 360 KB   _ 320 KB   _ 180 KB   _ 160 KB   _ Winchester

EXECUTE - Proceed
CANCEL  - Return to Menu
RETURN  - Go to next field

```

Figure 3-9. The DISK FORMAT Utility Screen

STEP 4: Enter an A or a B next to the Drive prompt to indicate the drive in which you want to format your disk. Press RETURN.

STEP 5: Press EXEC. A message similar to the following appears on the screen: "Insert new diskette for Drive A: and strike any key when ready." Insert the diskette you want to format into the designated drive. Press any key on the keyboard to start the formatting process.

STEP 6: When the system finishes formatting, it displays another message on the screen: "Volume label (11 characters, RETURN for none)?" You now have the option of specifying a volume label (up to 11 alphanumeric characters) to identify the diskette. If you want to specify a label, enter it following the prompt and press RETURN. If you do not want to specify a label, you need only press RETURN. Refer to The Wang Professional Computer Utility Programs User Guide for an explanation of volume labels.

STEP 7: The system displays a message specifying the total number of bytes on the disk and the number of bytes available. The system then displays the prompt: "Format another (Y/N)?" If you want to format another diskette, enter a Y to repeat this process. If you do not want to format another diskette, enter an N. The system then emits a beep and requests you to press any key on the keyboard to return to the System Utilities menu. Refer to The Wang Professional Computer Utility Programs User Guide for further information on the DISK FORMAT utility.

3.5 BACKING UP YOUR DISKETTES

Since information on a diskette can be inadvertently damaged or destroyed, it's important to develop the habit of making backup copies of all your diskettes. This backup procedure is easy to perform. It involves copying all of the files on one diskette onto a blank diskette. The process also formats your blank diskette as it copies the files onto it. Use the following steps to guide you through the process of copying System Diskette I onto a backup diskette.

STEP 1: Position the acceptance block next to the DISK COPY option on the System Utilities Menu. Insert System Diskette II in Drive B. Press EXEC. The DISK COPY utility display in Figure 3-10 appears on the screen.

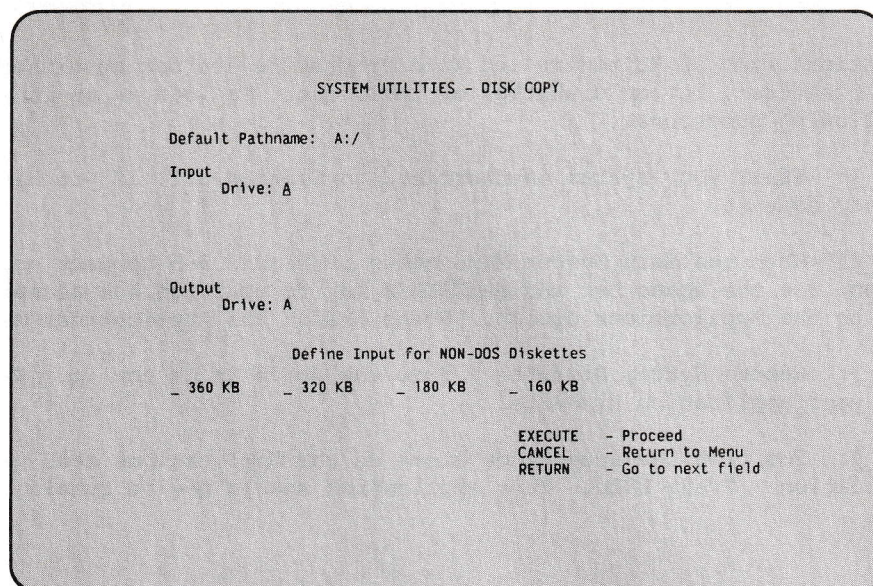


Figure 3-10. The DISK COPY Utility Screen

STEP 2: Press RETURN to position the cursor next to the Output Drive prompt. Enter the letter A next to this prompt. Press EXEC. The following message appears on the screen:

```

Diskcopy version 1.00
Insert source diskette in Drive B:
Insert object diskette in Drive A:
Press any key to continue.

```

STEP 3: Insert the blank diskette in Drive A. Press any key on the keyboard.

STEP 4: When the system finishes the copying process, the prompt: "Copy another diskette (Y/N)?" appears on the screen. If you wish to repeat this procedure, enter a Y; otherwise, enter an N. If you enter an N, the system displays the message: "Insert SYSTEM disk in Drive A: Press any key to continue."

STEP 5: Make sure that System Diskette I is in Drive A. Press any key on the keyboard. The system then emits a beep and prompts you again to press any key on the keyboard to return to the System Utilities Menu.

3.6 LOADING AN APPLICATION

Applications such as Multiplan and Word Processing are not on either of the System Diskettes, but on diskettes of their own. To load an application, use the following procedure.

STEP 1: Start your system as described in Section 3.1, if you have not already done so.

STEP 2: When the Main System Menu shown in Figure 3-5 appears on the screen, use the space bar and BACKSPACE key to position the acceptance block next to the Applications option. Press EXEC. The Applications Menu appears.

STEP 3: Remove System Diskette I from the drive it is now in. Replace it with your application diskette.

STEP 4: Position the acceptance block on the Applications Menu next to your application. Press EXEC. Your application should now be running.

NOTE:

If your application is not listed on the Applications Menu, check to see whether it's listed under another Main System Menu selection such as Communications or Program Development. If the application isn't listed on the menus, you need to use the MODIFY SYSTEM MENUS utility to put it on the appropriate menu. The MODIFY SYSTEM MENUS utility is described in The Wang Professional Computer Utility Programs User Guide.

To provide easier access to an application, you can make a copy of System Diskette I, delete any unnecessary files from your copy, and copy the application files to the modified System Diskette I. This eliminates the need for you to replace System Diskette I with your application diskette when you enter your application, and to replace your application diskette with System Diskette I when you exit your application. Appendix J provides step-by-step instructions for this procedure.

3.7 ERROR MESSAGES

It is easy to create situations that cause the system to display an error message on the screen. Appendix C lists all of the error messages and includes an explanation of each one. In addition, Appendix A, Common Problems, provides you with information that can help you find your way out of trouble. If all else fails, restart your system to see if you develop the same problem a second time. If not, you've probably made a syntax error. If you do develop the same problem, read over the section of the guide that explains what you're trying to do. Restart the system and try again. If you still encounter the same problem, record what happened on a sheet of paper and call the Wang Professional Computer Assistance Center at 1-800-343-1098.

4

COMPUTER CONCEPTS AND TERMINOLOGY

Introduction
Instructions and Programs
Main Memory and External Devices
Files
Measuring Storage Capacity
Records and Blocks
Disk Organization
Communicating with the Computer

CHAPTER 4

COMPUTER CONCEPTS AND TERMINOLOGY

4.1 INTRODUCTION

This chapter introduces some fundamental concepts of computer operation. You need to understand these concepts, and the terminology associated with them, in order to understand the discussions of computer operations in later chapters of this book. If you have had no previous introduction to computers, you should read this chapter. If you have had previous computer experience, you can proceed to Chapter 5.

4.2 INSTRUCTIONS AND PROGRAMS

There are many differences between computers and other machines. From the user's point of view, however, the most important difference is that a computer is a machine you control through the use of language. Unlike other machines, you control a computer by giving it instructions expressed in words and symbols. For example, "PRINT 2 + 2" is an instruction in the BASIC computer language telling the computer to add two and two and print the result.

A set of instructions grouped together for a specific purpose is called a program. The information in a program can also include data for the instructions to operate on, since the purpose of instructions is to process data. For example, a comptroller might use a computer program to calculate and print payroll checks. The payroll program could contain an instruction to multiply an employee's salary by a percentage to obtain the amount of a deduction. To execute this instruction, the computer must have the amount of the employee's salary and the percentage of the deduction. Both the instruction and the data could be contained in the program. (Usually, however, it is not efficient for a program to contain the data it works on. Refer to Section 4.4.1.)

In describing computer languages, computer literature often makes a distinction between two kinds of instructions: commands and statements. Commands instruct the computer to perform system operations, such as loading a data file. Statements tell the system to perform processing operations, such as calculating a mathematical equation. While this distinction is important in many contexts, the fundamental thing to remember is that both commands and statements are instructions belonging to some program.

4.2.1 The Operating System

Every action the computer performs originates from a program. Before you enter a program of your own, the computer is executing programs that belong to its operating system. The operating system is the underlying set of programs that control and support the running of other programs. For example, in order to use a payroll program, you have to instruct the computer to run that program. The instruction to run the payroll program belongs to a program that is part of the operating system.

4.2.2 Application Programs and Utility Programs

The programs that run from the operating system belong to one of two kinds: application programs and utility programs. Application programs are programs that perform a specific business or clerical function, such as calculating and printing payroll checks or creating a personnel file. Utility programs, on the other hand, support the use of the computer for business applications but usually do not have a direct business function of their own. For example, you can write your own programs or modify existing programs by using a utility program called the Editor. The immediate function of the Editor is not to solve business problems, but to facilitate the writing of other programs that do.

4.3 MAIN MEMORY AND EXTERNAL DEVICES

Executing an instruction involves the two elements essential to any computer: main memory and the Central Processing Unit (CPU). The CPU executes all instructions. In order for the CPU to do this, however, the instructions must reside in main memory, where the CPU can retrieve them. Main memory stores all programs for use by the CPU, as well as data that the program may work on. Main memory also contains a storage area called a buffer, which temporarily stores items such as program results. Figure 4-1 illustrates the relationship between the CPU and main memory.

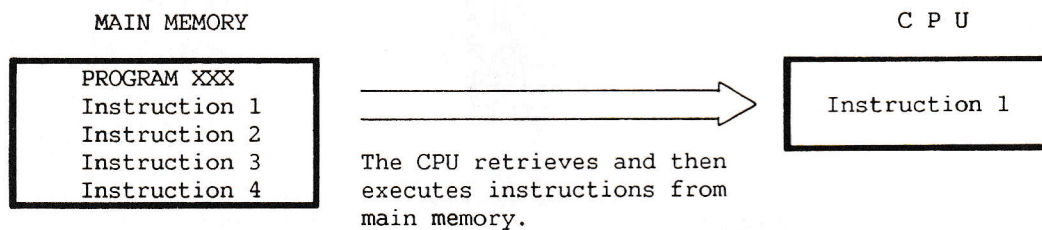


Figure 4-1. The CPU and Main Memory

Wang PC manuals often refer to main memory simply as memory. Other computer literature refers to it as internal memory, main storage, or internal storage.

The instructions and data stored in memory come to it from external devices such as the keyboard, a disk, or a communications device. When the computer has finished executing a program, it normally sends the results to an external device such as the monitor, a printer, a disk, or a communications device. Figure 4-2 illustrates the relationship between the computer and its external devices.

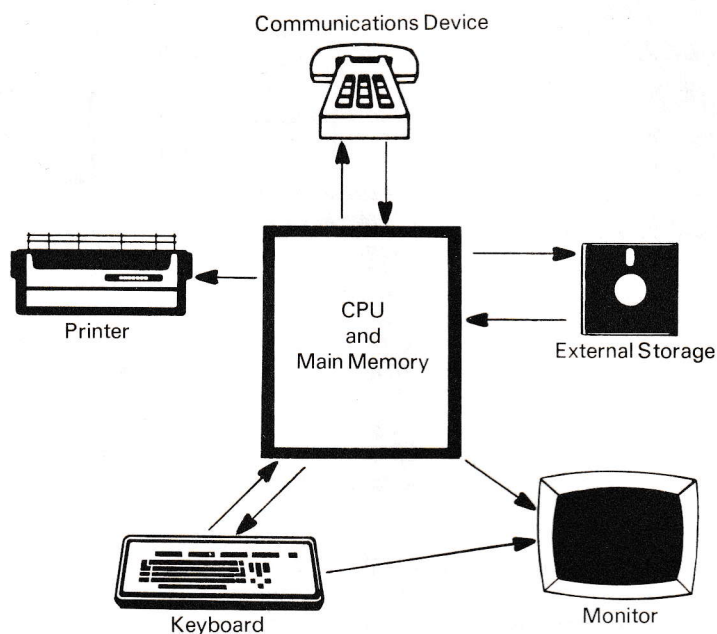


Figure 4-2. The Computer and External Devices

4.3.1 Input/Output

Input/Output (I/O) is a general term covering the transfer of information between memory and external devices. Bringing information from an external device into memory is called reading. Sending information from memory to an external device is called writing. Managing I/O is one of the most important functions of the operating system.

4.3.2 External Storage

In ordinary operation, a computer uses much more information than it is capable of retaining in main memory. Therefore, most information resides outside of memory on external devices such as magnetic tape or disks. Computer literature refers to storage of this type as auxiliary, secondary, or external memory or storage.

The Wang PC uses diskettes (described in Chapter 5) and the Winchester disk (described in Chapter 8) for its external disk storage. When the computer needs information that is not in memory, it searches for that information on the disk storage device and reads it into memory. Figure 4-3 illustrates the transfer of information between memory and external storage.

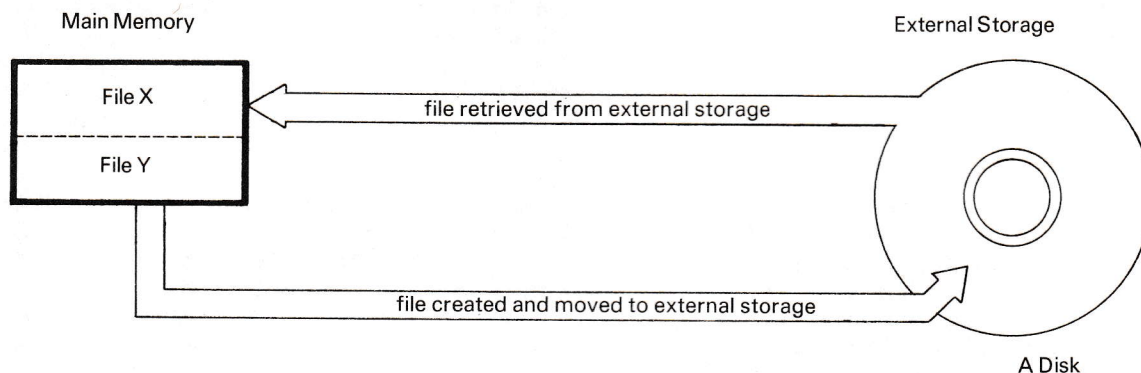


Figure 4-3. Memory and External Storage

4.4 FILES

In order for a computer to know where to look for information stored on disk, that information must be stored in organized, retrievable form. Specifically, the computer organizes information in external storage into units called files and retrieves it by reference to file names.

In the same way that you identify the information in an ordinary office file by giving the file a name, you create a computer file by associating information with a file name. The Wang Professional Computer Utility Program User Guide tells you how to create a file name. Certain programs that run on the Wang PC have their own rules for creating files. These rules are described in detail as part of the explanation of each program.

The computer finds the information in a particular file by keeping track of where that file is stored on disk. For example, you might have a payroll program in a file named PAYROLL. When you instruct the computer to execute this program, the computer looks up the location of PAYROLL on the disk, goes to that location, and reads the information it finds there into memory.

4.4.1 Types of Files

Files can contain programs or they can contain data for a program to operate on. Once created, program files are usually harder to modify than data files; the instructions in a program usually do not need to be changed as often as does data. Therefore, it is more convenient to keep the data in separate files. For instance, if a payroll program contained the names and salaries of employees, you would have to rewrite part of the program every time you added or deleted a name or made any change in a salary. Instead, you could keep salary data in a file named, for example, PAYDATA. The payroll program could then instruct the computer to read this data into memory at the appropriate time.

Another data file might contain a business letter you have written. From your point of view, this file may seem unlike PAYDATA in that it has a purpose other than providing data for a program to process. From the point of view of the computer, however, the business letter is data to be processed by a program, for instance, the program that sends the letter to a printer. As far as the computer is concerned, in other words, all information kept in files consists either of programs or of data to be processed by programs.

4.5 MEASURING STORAGE CAPACITY

Some of the system utilities display messages informing you that a file has so many bytes or that so many bytes are unused in memory or on a disk. Bytes are the units that measure the storage capacity of memory and disks. A byte is the amount of space used to store one alphabetic or symbolic character. For example, the symbol \$ and the letter A each take up one byte of storage. A numeric character can take up one or more bytes, depending on the character code the computer uses.

4.6 RECORDS AND BLOCKS

Data files usually contain more information than the computer needs at a particular time. Therefore, when the computer reads information from a disk or writes it to a disk, it usually does not deal with a whole file at once. Instead, the computer handles the contents of files in units known as records and blocks.

A record is a specific number of bytes. The number of bytes in a record can vary from file to file and even within the same file. When the computer transfers information to or from a file, it moves a group of consecutive records, called a block. The operating system specifies the size of a block. When it has moved a block of records into memory, the computer uses the information in the block on a record-by-record basis. Figure 4-4 illustrates the relationship of files, blocks, and records.

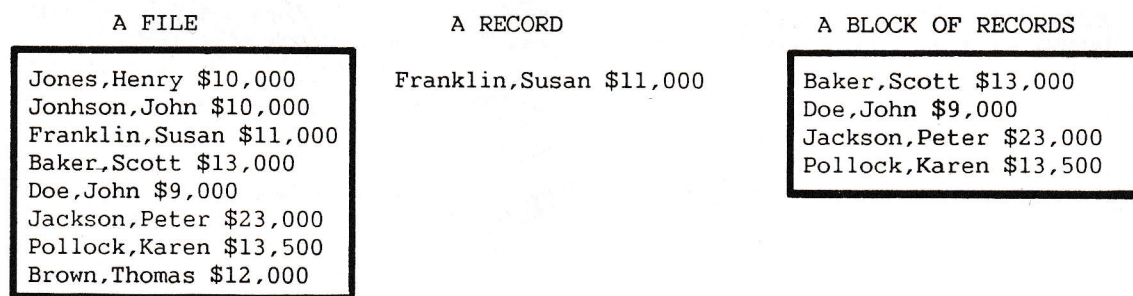


Figure 4-4. File, Block, and Record

4.7 DISK ORGANIZATION

Because you create, modify, and delete files from a disk at various times, the computer usually assigns the contents of a file to noncontiguous areas of a disk. When you create a file named PAYDATA, for instance, the file takes up only so much area on the disk. When you later create another file, say, TAXFILE, the computer may assign that file to the area that is contiguous to PAYDATA. If you then want to add information to the PAYDATA file, the computer must assign the additional information to an area that is not contiguous to PAYDATA's original location.

Since the information belonging to a file can be scattered throughout the disk, the computer must have a way of finding it. To record where the parts of a file are located, the Wang PC reserves areas on diskettes and on the Winchester disk known as directories and File Allocation Tables (FATs). Before you can understand how these function, you must first understand how information is physically handled on a disk.

A disk's storage area is laid out in concentric circles called tracks. The machinery in a disk drive accesses the tracks in units called sectors. That is, the computer does not read or write an entire track at one time but only a sector of that track. On the Wang PC, a sector is made up of 512 bytes.

The computer assigns space to files in groups of contiguous sectors called allocation units. For example, it may first allot eight allocation units to the file PAYDATA, then the next nine allocation units to TAXFILE, and then the next ten to the continuation of PAYDATA.

A directory contains, among other things, the names of files and the number of the sector containing a file's first record. The information in the File Allocation Table allows the computer to find the remaining sectors allotted to the file. (The Wang Professional Computer Program Development Guide explains directories and FATs in greater detail.) Figure 4-5 shows the layout of a directory and a File Allocation Table on a track of a disk.

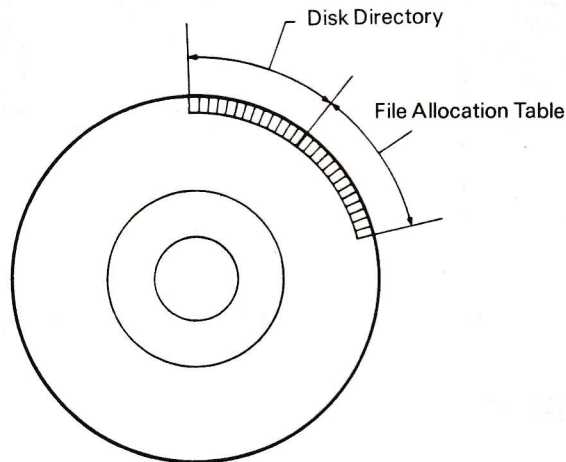


Figure 4-5. Disk Directory and File Allocation Table

4.8 COMMUNICATING WITH THE COMPUTER

There are two ways in which a computer executes instructions. Sometimes the computer executes a series of instructions stored in a file. This method of executing instructions is called batch processing. At other times, the computer executes instructions as you enter them from the keyboard. This method is called interactive processing.

Since almost all uses of the Wang PC involve interactive processing to some degree, the following sections explain interactive processing. For an explanation of batch processing, refer to The Wang Professional Computer Utility Programs User Guide.

4.8.1 Prompts

In interactive processing, you respond to prompts displayed on the screen. A prompt is simply a request for you to supply specific information that enables the computer to proceed to the next operation. Prompts can take the form of words or symbols. For example, when you power on your system, the third screen you see in normal operation includes the prompt:

Date _ _ / _ _ / _ _

Time _ _ : _ _ : _ _

You respond by typing in the date and time and pressing the EXEC key.

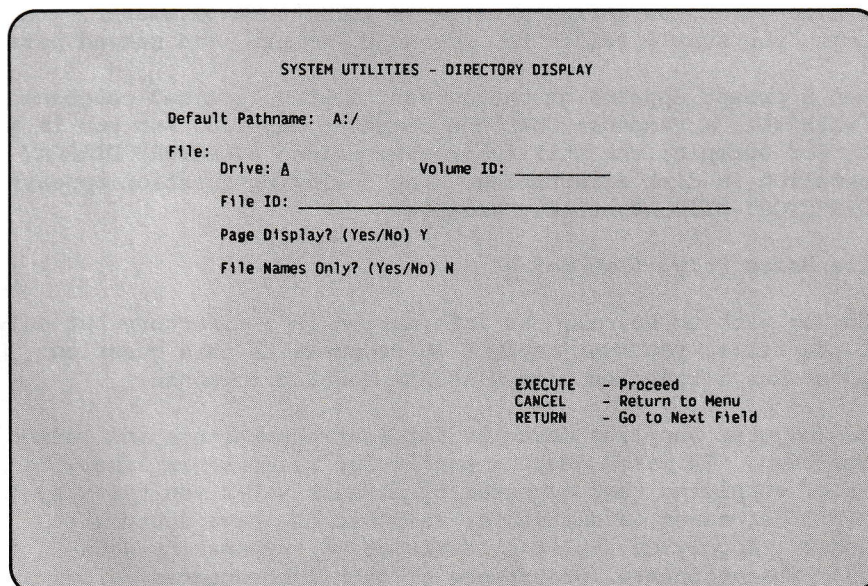
The prompt displayed by the interpretive BASIC program, on the other hand, is simply the letters Ok. This prompt tells you the computer is ready to accept instructions in BASIC. You respond by typing the instruction and pressing RETURN.

Notice that in the first example your response to the prompt is not complete until you press the EXEC key, and in the second example it is not complete until you press the RETURN key. These keys send your instruction to the computer. Before you press them, you can go back and change your response to the prompt. In any case, it is important to note that merely typing a response does not tell the computer to carry out that instruction.

The EXEC and RETURN keys often send instructions to the computer, but some programs may use other keys. In still other programs, just typing a response can be sufficient to give the computer a command. The manuals describing these programs list the procedures for responding to prompts.

4.8.2 The Cursor and Fields

In the following prompt from the DIRECTORY DISPLAY utility program, the EXEC key sends the instruction to the computer, but the RETURN key has a different purpose:



SYSTEM UTILITIES - DIRECTORY DISPLAY

Default Pathname: A:/

File: Drive: A Volume ID: _____

File ID: _____

Page Display? (Yes/No) Y

File Names Only? (Yes/No) N

EXECUTE - Proceed
CANCEL - Return to Menu
RETURN - Go to Next Field

Figure 4-6. DIRECTORY DISPLAY Utility Prompts

This prompt asks you to supply several items. The area on the screen where you enter your response is known as a field. The place where you begin typing is indicated on the screen by a blinking horizontal bar. This bar is called the cursor. When you enter a character in a field, the cursor moves to the next position within that field. When you have filled a field, the cursor remains in the last (rightmost) position in the field.

On the screen shown in Figure 4-6, you must press RETURN to move the cursor to the next field. If you do not press RETURN, you can change your entry before going on to the next field. The computer will not accept any entry you make on this screen until you press the EXEC key. To modify any entry in this prompt, return the cursor to the appropriate field by pressing RETURN a sufficient number of times. (When the cursor is at the last field, RETURN moves the cursor to the first field.) The keys used to move the cursor from one field to another may differ from program to program.

4.8.3 Parameters and Defaults

In response to a prompt, you must frequently type in a value for some variable. For example, in response to the time prompt you supply digits representing the hour, minute, and second. You might respond to the time prompt as follows:

11:15:00

A variable to which you assign a value is known as a parameter. Thus, in the time prompt, you supply values for the hour, minute, and second parameters.

When a prompt appears on the screen, a predetermined response frequently appears with it. A response that the computer supplies for you is known as a default. For example, the utility program called DIRECTORY DISPLAY displays the information in disk directories. The following question appears as part of the DIRECTORY DISPLAY utility prompt:

File Names Only? (Yes/No) N

If you do not want to see all the information in a directory but only the names of the files, you must enter Y in response to this question. However, the computer has already entered N as the default response.

The computer supplies defaults for your convenience and, sometimes, for your protection. In cases where a particular response is likely to be the most common, supplying that response by default saves you the step of typing it in. In other cases, a particular response can have destructive consequences. Supplying the least destructive response by default protects you against the accidental occurrence of such consequences, since it requires you to deliberately change the response in order to achieve them.

For example, you can use a utility program called FILE DELETE to delete a group of files from a disk. It is possible to accidentally include in the group a file you do not wish to delete. To protect against this, the computer displays the following prompt before executing the command.

Are you sure? (Y/N)N

By making N the default, the computer reduces the risk of accidental deletion by requiring you to change the response in order to execute the command.

4.8.4 The Default Drive

The default drive is the drive the computer automatically uses for I/O operations. It is also the drive from which the system starts. For example, if you select an item from the Main System Menu, the computer looks for that item on the diskette in the default drive. If the computer cannot find the item, it returns a message asking you to insert the proper diskette in the drive.

There are times when you may want to change the default drive (for example, if you want to access a menu that is on a diskette in another drive). You can change the default drive in several ways. The CHECK DISK and MODIFY SYSTEM MENUS system utilities and the Other option on the Main System Menu allow you to temporarily change the default drive. When the change is only temporary, the computer uses another drive as the default while a particular program is running, but restores the original default drive when it returns to the place from which it invoked that program.

You can change the default drive permanently by using the SET DEFAULT DRIVE system utility. You can also select the DOS Command Processor from the Main System Menu and use the method described in The Wang Professional Computer Utility Programs User Guide. When the change is permanent, the computer uses the new drive as the default drive until you restart the system or until you make another permanent change.

4.8.5 Menus

Often the Wang PC prompts display a series of options in horizontal or vertical lists. These lists are called menus. To instruct the computer, you select one or more options from the menu. The way you select these options differs with the design of each program. What you must do will be clear from directions given on the screen itself or from the manual that describes the program in which you are working. You can get additional assistance by using the HELP key in the upper left-hand corner of the keyboard (refer to Section 7.1.3). Figure 4-7, the Wang PC Main System Menu, is an example of a menu.

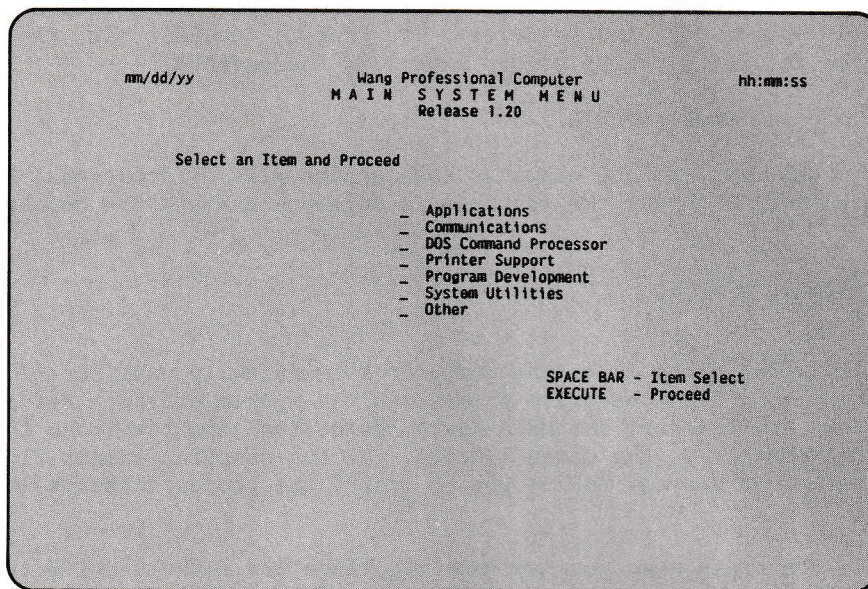


Figure 4-7. The Wang PC Main System Menu

The list in the middle of the screen contains the options available from this menu. You can select only one of these options at a time. The messages in the bottom right-hand corner of the screen tell you what keys to use in making your selection.

Immediately to the left of the first option is a solid, brightly lit block called an acceptance block. Before you can select an option, the acceptance block must be positioned next to it. The first message in the bottom right-hand corner ("SPACE BAR - Item Select") tells you to move the acceptance block from item to item by pressing the space bar. (When the acceptance block reaches the last item in the list, pressing the space bar moves it back to the first item.)

You can also move the acceptance block to an item on this menu by pressing the first letter of the item. If more than one item has the same first letter, pressing that letter would move the acceptance block to the next item beginning with the letter. When you reach the last item beginning with a letter, pressing the letter moves the acceptance block to the first item beginning with that letter.

Once the acceptance block is next to the option you want, press the EXEC key to enter your selection. Thus, the second message in the bottom right-hand corner reads:

EXECUTE - Proceed

In normal operation, the next screen that appears will belong to the option you have selected.

5

USING DISKETTES

What Is a Diskette?

Double-Sided Double-Density Diskettes

Parts of a Diskette

Taking Care of Your Diskettes

CHAPTER 5 USING DISKETTES

5.1 WHAT IS A DISKETTE?

A diskette is a thin magnetic disk that stores information. The information can include any combination of programs, files, or data. The information can be in various forms including applications software like PC Word Processing, languages like BASIC, operating systems like MS-DOS, or any other type of program you create, buy, or use. You can continually reuse or add to information that is stored on diskettes.

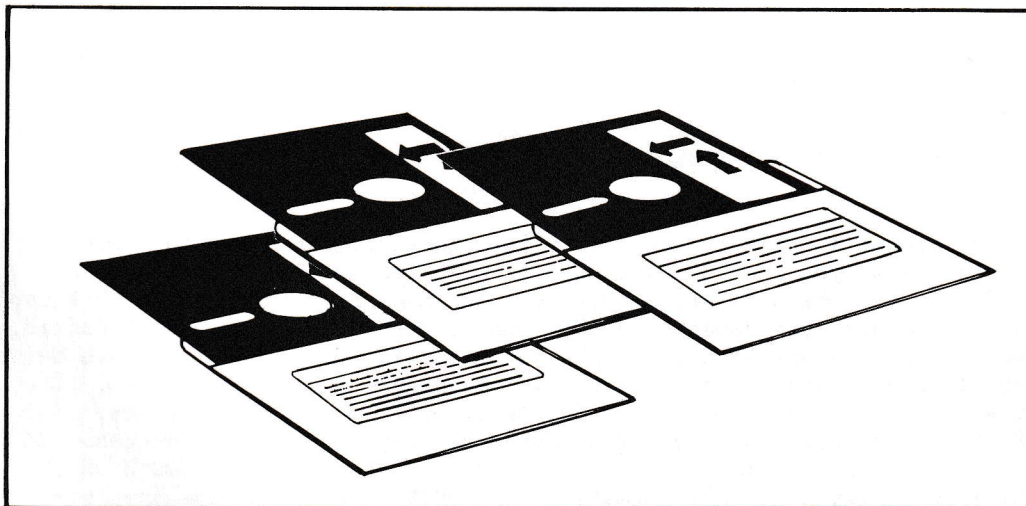


Figure 5-1. Wang PC Diskettes

When you want to put information on a diskette, a read/write head inside the diskette drive writes the information onto the diskette. When you want to run a program or retrieve some information from a diskette, a read/write head reads the information into the computer's memory. Figure 5-2 shows the inside of a diskette drive, including the location of a read/write head and the diskette recording slot.

5.3 PARTS OF A DISKETTE

A diskette is actually a very simple storage medium composed of the parts shown in Figure 5-3.

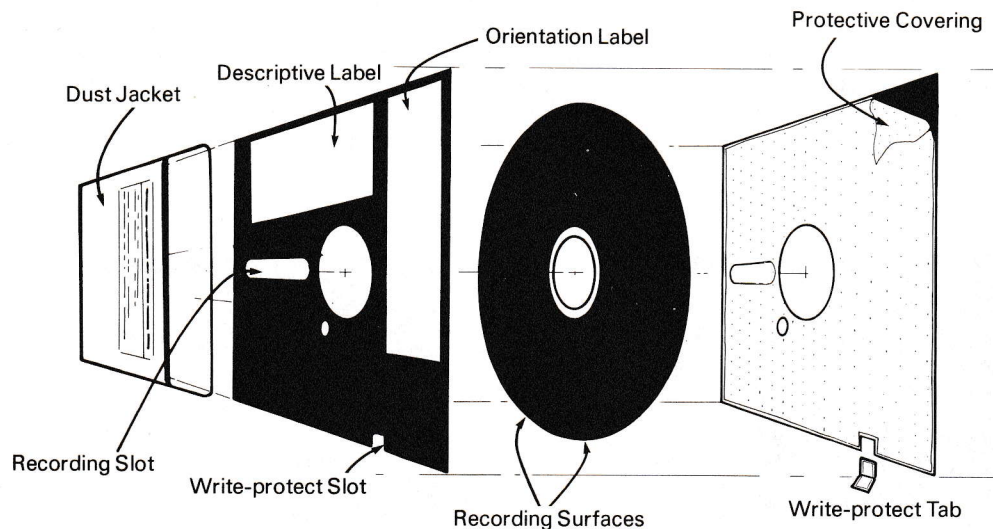


Figure 5-3. Parts of a Diskette

Protective Covering: The black plastic cover material protects the diskette's surfaces. The white undercoating, which is bonded to the black cover material, keeps the diskette surfaces clean and reduces friction. This undercoating also prevents dirt and dust from damaging the diskette.

Recording Surfaces: The magnetic surface of the diskette is the medium on which information is stored. Both sides of the diskette are used to store information on the Wang PC. You should not touch the part of the diskette that shows through the recording slot.

The Recording Slot: The recording slot is the area on the diskette that the read/write heads scan in order to read information from the diskette or write information to the diskette.

Write-Protect Slot: The write-protect slot provides you with a way of protecting information on a diskette. When you cover the write-protect slot with an adhesive tab, the diskette is write-protected. This means that the system can read all of the information on this diskette into memory, but the system cannot write additional information onto the diskette. You should write-protect any diskettes that contain valuable programs or data that you want to protect from accidental loss.

When the write-protect slot is uncovered, the diskette is not write-protected. This means that the system can read information from the diskette and write additional information to the diskette. You should make sure that the write-protect slot is uncovered before you attempt to store files on a diskette. Figure 5-4 shows the difference between a write-protected diskette and a diskette that is not write-protected.

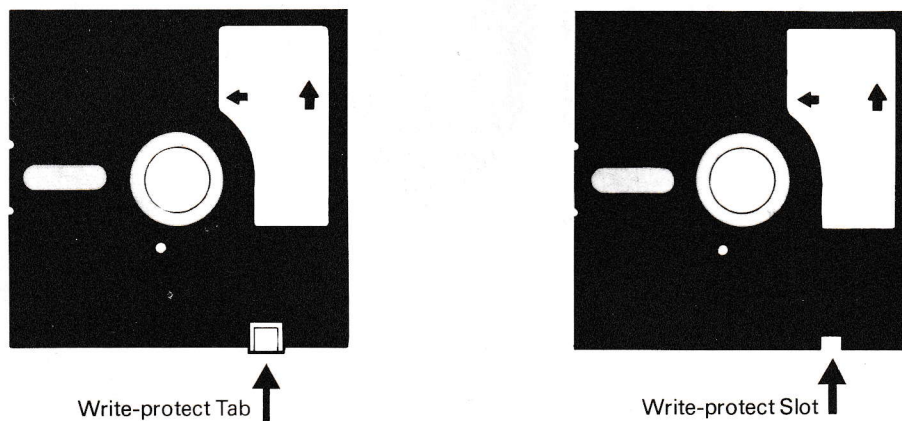


Figure 5-4. The Write-Protect Feature

NOTE:

Blank Wang PC diskettes are manufactured with the write-protect slot uncovered. These diskettes are not write-protected. You must cover the write-protect slot with one of the enclosed adhesive tabs to write-protect the diskette.

Orientation Label: This label indicates how you should position the diskette when you insert it into the diskette drive.

Descriptive Label: You should use this label to indicate the type of information on the diskette and the date it was created or last updated. Be sure to use a felt tip pen when you write information on a diskette label, as pencils and ball point pens can damage the diskette's surfaces.

Using Diskettes

Dust Jacket: When you're finished using a diskette, put it in its paper dust jacket to protect it from scratches.

5.4 TAKING CARE OF YOUR DISKETTES

Diskettes are a reliable and safe medium for storing electronic information. However, when diskettes are mistreated, information can be partially or totally lost. Since a full diskette could have the equivalent of over 142 typewritten pages stored on it, damaging one can represent a serious loss. This is especially true if you don't have a backup copy of an important diskette. Backup copies of diskettes are easy to create and update. Section 3.5 describes the procedure for backing up diskettes.

Use the following list of recommendations to take care of your diskettes properly:

1. Use a felt tip pen when you label a new diskette. Never use a ball point pen or pencil, as they can scratch the diskette's surfaces.
2. Do not touch the exposed magnetic surfaces of the diskette.
3. Keep your diskettes away from any type of magnetic material. Such exposure can erase or distort the information on a diskette.
4. Do not fold or bend diskettes or allow them to warp.
5. Store your diskettes in an environment with temperatures between 50° and 125°F (10° and 52°C) and a relative humidity between 8% and 80%. Conditions which exceed either of these limits can physically change the recording surfaces of the diskette so that information on them becomes irretrievable.
6. Do not open the door of a diskette drive if the red indicator light, located on the front of the drive, is on. You can scratch the surface of a diskette while it is being read from or written to by opening the door when the indicator light is on.

6

USING THE KEYBOARD

Introduction
Keyboard Functions
Combination Key Codes
The Typewriter Keys
Numeric Keypad
Cursor Control Keys
Special Operations Keys
Special Function Keys
Important Keys and Keyboard LEDs



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CHAPTER 6

USING THE KEYBOARD

6.1 INTRODUCTION

The keyboard provides you with a way of interacting with your system. Whether you're making a selection on a menu, using an application, or developing a program, you use the keyboard to direct the operation of your system.

The system, in turn, uses the keyboard to communicate with you, either by sending a code through the set of five Light Emitting Diodes (LEDs) or by producing sounds through the speaker located within the keyboard housing. For example, during the power-on diagnostics, the LEDs indicate the start, finish, and results of the tests. Similarly, if you try to access an application without first inserting the corresponding diskette into the drive, the speaker emits a beep at the same time the "File Not Found" message appears on the screen.

Though similar in appearance to an ordinary typewriter keyboard, the Wang Professional Computer keyboard offers you many additional capabilities. You need to learn how to use these capabilities in order to take full advantage of the power of the system.

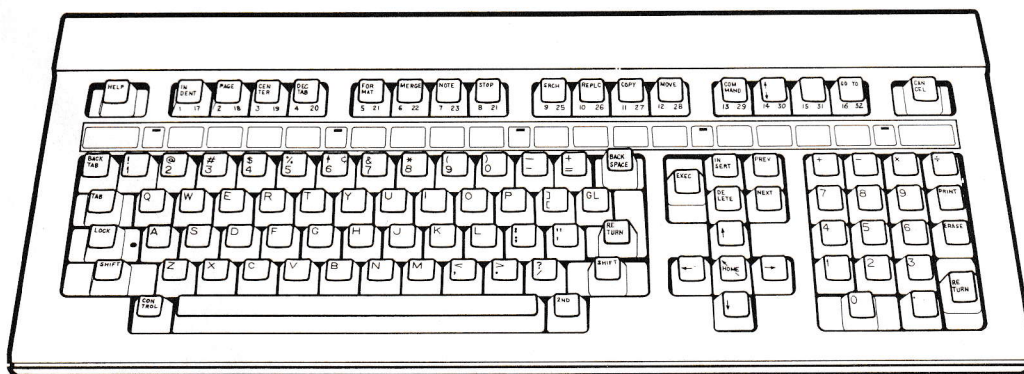


Figure 6-1. Wang Professional Computer Keyboard

Using The Keyboard

6.2 KEYBOARD FUNCTIONS

This chapter presents a general description of how to use the keyboard. You should always check the appropriate reference manual before you begin to use an application, since different types of software use particular keys in specific ways. For example, in the Wang PC Word Processing software, the special function keys perform the functions as they are labelled on the keys. However, in the Multiplan software, the special function keys perform a completely different set of functions. When you load interpretive BASIC, you can use the special function keys to issue the set of BASIC commands that appear at the bottom of the BASIC screen display.

6.3 COMBINATION KEY CODES

Many keys, including the special function keys just discussed, can be used in combination with other keys to create additional functions. Keys gain this additional functionality when you press them along with SHIFT, CONTROL, or 2ND.

You use combination key codes in the same way you use SHIFT to create uppercase letters on a typewriter. First you press SHIFT, CONTROL, or 2ND, and then you press the combination key until the desired function occurs. The important concept involved in using these combination key codes is that you must hold down the first key while you press the second key.

When a combination key code is shown in this manual, it is shown in the correct keystroke sequence with a plus sign joining the two keys. For example, CONTROL + G is a control code that creates a beeping sound. To use this code, hold down CONTROL while you press the G key.

6.4 THE TYPEWRITER KEYS

The typewriter keys, shown in Figure 6-2, function the same as they do on a standard typewriter, with the following differences.

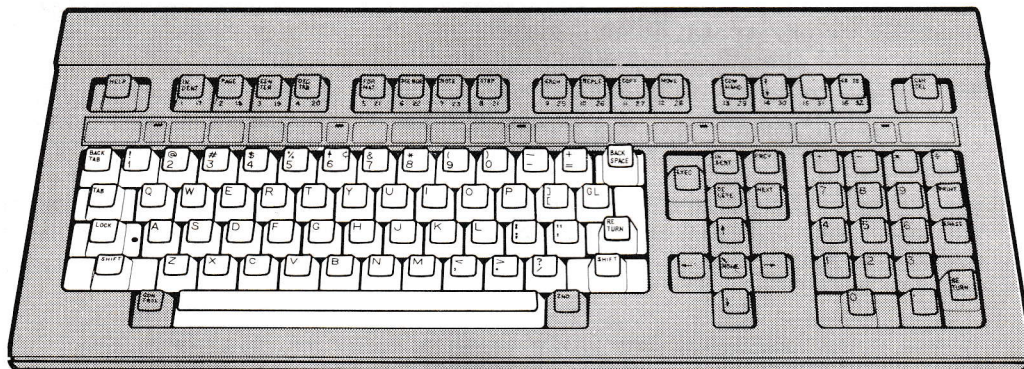


Figure 6-2. The Typewriter Key Group

Repeating keystrokes -- To make any character key within this key group repeat, just hold down the key for more than one-third of a second. There is no separate repeat key on the keyboard.

SHIFT -- Press SHIFT and then any character key (i.e., any letter, number, or symbol) within this key group to display the shifted character. As with a typewriter, a shifted letter key produces a capital letter. A shifted numeric or symbolic key produces the upper symbol on that particular key. When you release SHIFT, all subsequent characters will be lowercase.

NOTE:

Pressing SHIFT does not release LOCK. The LOCK key does not follow the same rules as the SHIFT key for producing shifted and unshifted characters. Be sure to read the LOCK description for more details.

You can also use SHIFT in combination with various other keys in particular applications to perform special functions. Each Wang Professional Computer reference manual describes the special uses of SHIFT within the corresponding software.

LOCK -- Press LOCK when you want letters to be capitalized and numeric and symbolic characters to remain unshifted. This feature makes it easy to type a group of numbers and uppercase letters without continually shifting up and down. If you need to type a shifted symbol while LOCK is engaged, press SHIFT and the appropriate key. (When LOCK is engaged and you press SHIFT and any alphabetic key, the letter appears as lowercase on the screen.) When you press LOCK, the red indicator light on the key lights up. LOCK is only released when you press it again. Once you do this, the indicator light will go out, showing that the keyboard is unshifted.

BACK SPACE -- Press BACK SPACE when you want to move backwards within text or within a menu. If you use the key to move backwards through text, you erase what's already written as you backspace through it.

space bar -- Pressing the space bar creates a space as you move forward through text. Characters ahead of the cursor position are erased as you press the space bar. If you want to move through text without erasing, use the cursor control keys.

If you press the space bar while using a menu, you will move the acceptance block to the next selection in the menu list.

RETURN -- The RETURN key is used in several ways. In a utility screen, you press RETURN when you want to move to the next field on the screen. You can then enter information in the field or modify the existing information, pressing RETURN again to move to the next field.

In BASIC, you press RETURN to signal the end of an instruction line or to input data.

In the Wang PC Word Processing software, RETURN is used within menus as described above. It is also used to indicate the end of a paragraph when you create a document. RETURN is not used in quite the same way as the carriage return key on a typewriter. You do not press RETURN at the end of each line, since the system automatically begins a new line when it reaches the end of the previous line.

NOTE:

RETURN on the numeric keypad functions the same as RETURN on the typewriter keypad. You can use these keys interchangeably.

GL -- The GL (Glossary) key is used in PC Word Processing to automate Word Processing functions for your particular needs. You can use the key to put frequently used information into your documents. Refer to The Wang Professional Computer Word Processing Reference Guide for a detailed discussion of the function of this key.

In BASIC, you can use the GL key in combination with an alphabetic key to input BASIC keywords. To do this, you first press the GL key, and then press the alphabetic key that corresponds to the keyword you want to enter. Refer to the Wang Professional Computer BASIC Language Guide for more information on entering BASIC keywords with the GL key.

BACK TAB -- Press BACK TAB to move the cursor to the previous tab setting on the display. (This key is used in Word Processing and in various menus.)

TAB -- Press TAB to move the cursor to the next tab setting on the display. (This key is used in Word Processing and in various menus.)

6.5 NUMERIC KEYPAD

The numeric keypad, shown in Figure 6-3, is included on the keyboard to make it easier to key in large amounts of numeric information. However, you cannot perform calculations with the numeric keypad unless you've loaded a type of software that supports arithmetic calculations, such as BASIC or Multiplan.

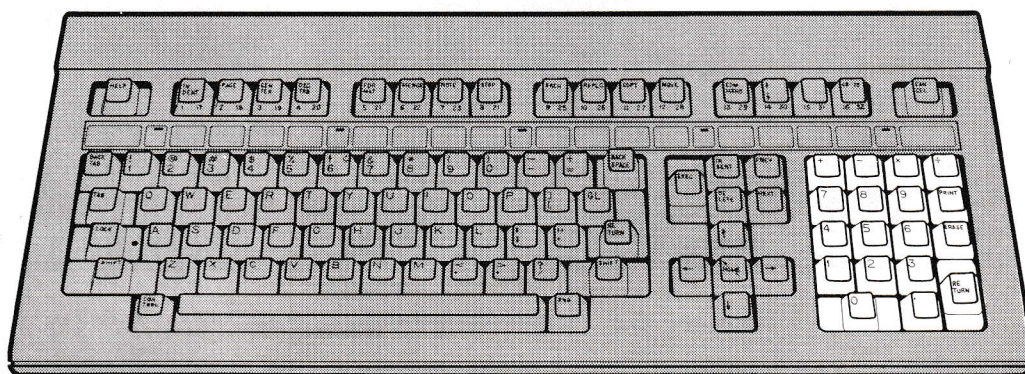


Figure 6-3. The Numeric Keypad

The functions of the keys on this keypad are described below.

PRINT -- Use PRINT to print information. Each Wang PC software reference manual explains how to print files.

ERASE -- Within certain applications you can press ERASE to delete everything from the present cursor position to the end of the field.

SHIFT + ERASE -- Within certain applications this combination erases an entire field regardless of the present cursor position.

RETURN -- RETURN performs the same functions as RETURN on the typewriter keypad. It is included on the numeric keypad to increase the speed of data entry.

X -- The multiplication symbol appears as an asterisk (*) within BASIC.

÷ -- The division symbol appears as a slash (/) within BASIC.

6.6 CURSOR CONTROL KEYS

The cursor is a horizontal blinking bar that shows you where the next character you type will appear on the screen. Moving the cursor around the screen with the cursor control keys does not erase any previously entered characters. However, if you move the cursor by pressing the space bar or BACK SPACE, you will erase each character as you go. You can repeat the cursor movement caused by pressing a cursor control key if you hold down the key for more than one-third of a second.

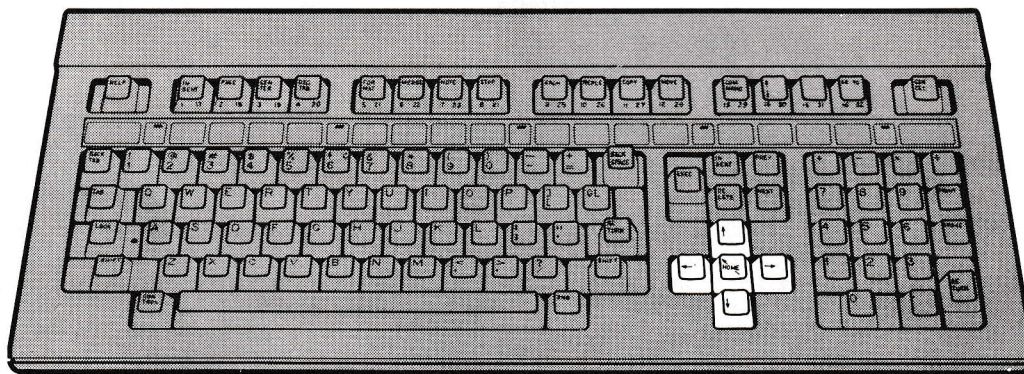


Figure 6-4. The Cursor Control Keys

The basic function of each key in this group is described below. Remember to use the reference manual for each application to learn the exact function of the cursor control keys in a particular situation.

RIGHT -- Moves the cursor one space to the right.

LEFT -- Moves the cursor one space to the left.

UP -- Moves the cursor up one line in its current column.

DOWN -- Moves the cursor down one line in its current column.

HOME -- Moves the cursor to the topmost left-hand position on the display (the first field on the display).

Using The Keyboard

6.7 SPECIAL OPERATIONS KEYS

Each of these keys performs a specific operation within the Word Processing software, the BASIC editor, and in several other applications.

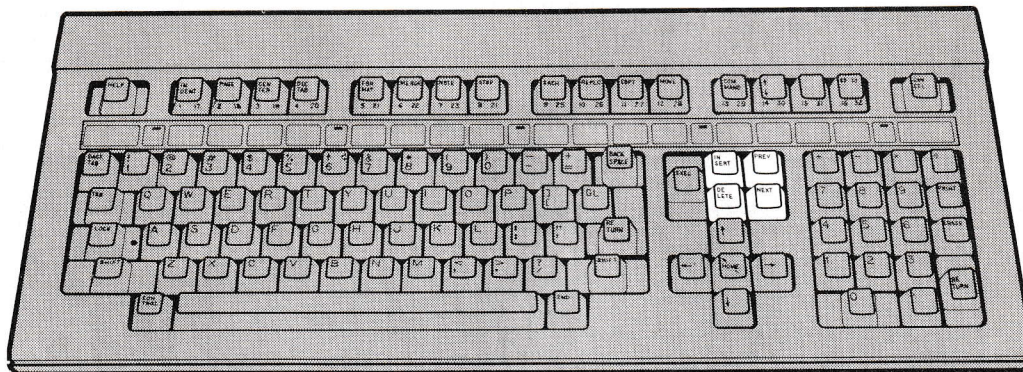


Figure 6-5. The Special Operations Keys

In general, the special operations keys perform the following functions within various applications.

INSERT -- Use INSERT to insert a character or series of characters within a field, within text, or to select an item on certain menu lists.

DELETE -- Use DELETE to delete a character or series of characters within a field. You can also use this key to deselect an item you previously selected in a menu list.

PREV -- Press PREV (the previous screen key) to move to the previous display. This key does not work in the system menus or within the operating system. In those cases, press CANCEL instead.

NEXT -- Press NEXT to proceed to the next display. NEXT does not work in the system menus or within the operating system. In those cases, make a selection and press EXEC instead.

6.8 SPECIAL FUNCTION KEYS

Within various applications, this group of sixteen keys can be programmed to have special functions. The keycaps are labelled with the Wang Word Processing function names, since Word Processing is a widely used type of software. The Wang Professional Computer Word Processing Reference Guide describes the function of each of these keys in detail.

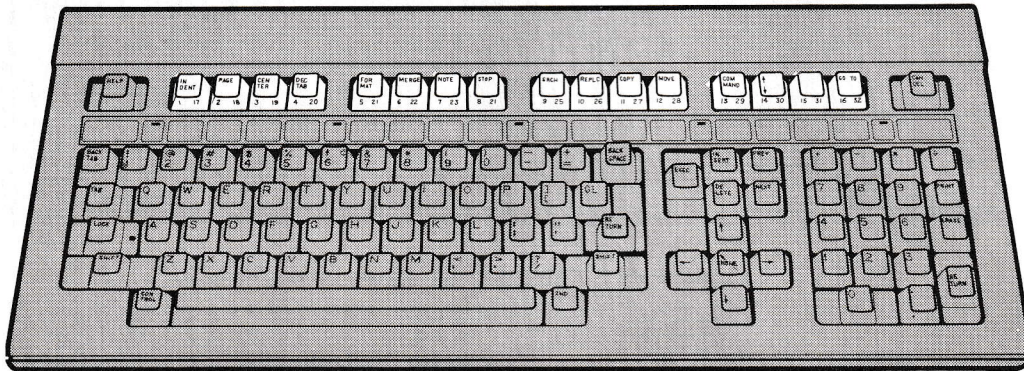


Figure 6-6. The Special Function Keys

In addition to PC Word Processing, many other types of software, including Multiplan, use the special function keys. Since the meaning of each key is different in Multiplan than in Word Processing, the labels on the keys are less than helpful if you're trying to use Multiplan. Therefore, Wang provides a new strip of labels, called a function strip, for many Wang-supplied software packages. These strips have an adhesive backing so that you can place them on your keyboard below the special function keys. You attach a function strip to the keyboard by positioning the strip so it is aligned with the proper function keys, and pressing it in place (refer to Figure 6-7).

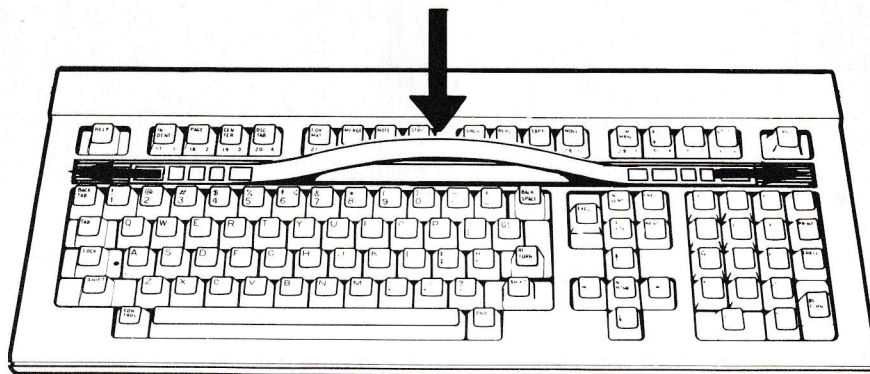


Figure 6-7. Installing a Function Strip

The special function keys can be used in a shifted mode within certain applications to produce a total of 32 special functions. The numbers on the vertical face of each of these keys represent their special function numbers, with 1 through 16 being the unshifted forms and 17 through 32 the shifted forms.

6.9 IMPORTANT KEYS AND KEYBOARD LEDs

You can use the keys described in this section to perform a wide range of functions. Though described last, they are among the most important keys for you to become familiar with. The keyboard LEDs are also defined in this section.

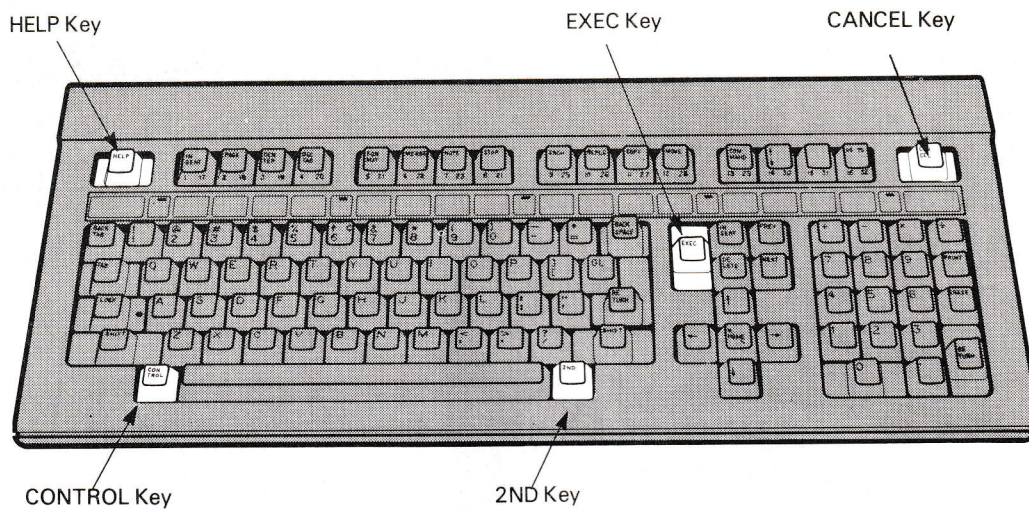


Figure 6-8. Important Keys and LEDs

HELP -- Press HELP to receive descriptions of the menu selections, functions, or commands available within a particular piece of software. These descriptions vary from one piece of software to another.

SHIFT + HELP -- Use this combination when you are in a Wang PC Word Processing document to produce a display that lists all the available Help screens (refer to Section 1.3.2).

CANCEL -- Press CANCEL while using the system menus to have the system ignore the work you've done in the present operation or selection and return to the previous operation or selection.

CONTROL -- Press CONTROL and one of the specified control code keys to perform specific functions.

2ND -- Press 2ND together with one of the specified 2ND code keys to perform special functions.

2ND + COMMAND, and then CANCEL -- Press 2ND + COMMAND simultaneously and then press CANCEL to restart the system. Refer to Section 3.3 for details.

EXEC -- Press EXEC to tell the computer to accept a display and to begin to carry out the function you selected.

The LEDs -- The 5 LEDs (Light Emitting Diodes) are used during the power-on diagnostics to indicate the status and results of the diagnostic tests. After you start your system, the LEDs can perform various functions within particular applications.

7

USING THE WANG PC SYSTEM SCREENS

Introduction

The Date and Time Screen

The Main System Menu

Loading and Exiting a Selection

Loading and Running Interpretive BASIC

CHAPTER 7

USING THE WANG PC SYSTEM SCREENS

7.1 INTRODUCTION

As discussed in Chapter 4, the Wang Professional Computer functions interactively by means of prompts. You communicate with the Wang PC by responding to these prompts as they appear on the screen. This chapter describes the series of screens and prompts that appear when you start the system with System Diskette I. The displays in which these prompts occur are known as system screens. Most of the screens on the Wang PC fit the descriptions in this chapter. However, some applications, such as PC Multiplan, PC Database, and PC Business Graphics use different screen designs. Refer to the documentation that accompanies these applications for a description of their screens.

As mentioned in Section 3.1, when you start the Wang PC, the monitor briefly displays the Start-up screen with the version number of your system. If the default drive contains a diskette with the system files, a second screen appears briefly to display the version number and copyright of the MS-DOS operating system. If you have installed a device driver (refer to Appendix I), this screen also displays the name of the driver you have installed. In normal operation, the next screen that appears contains a date and time prompt. This Date and Time screen is followed by the Main System Menu, offering choices that lead you to all the functions of the Wang PC. The screens that follow the Main System Menu depend on the choice you make from that menu.

The normal sequence of system screens may not appear if the diagnostic tests encounter an error. (Refer to Appendix B.) The sequence may also be interrupted if there is a problem with a diskette containing the system files, if you have modified the system software to display the DOS Command Processor prompt instead of the Main System Menu, or if System Diskette I contains a file named AUTOEXEC.BAT. (Refer to The Wang Professional Computer Utility Programs User Guide.)

As you purchase additional software, you may want to modify the system menus or add new menus by using the MODIFY SYSTEM MENUS utility. The Wang Professional Computer Utility Programs User Guide discusses this utility.

The system screens are designed for monitors with 80-character line displays. If your monitor has a 40-character line, you must use the DOS Command Processor rather than the system menus to give instructions to the computer. For either type of monitor, you can go directly from the Date and Time screen to the DOS Command Processor by pressing SHIFT + FORMAT. Refer to Section 7.3.6 of this manual and The Wang Professional Computer Utility Programs User Guide for explanations of the DOS Command Processor.

NOTE:

The screen descriptions in this chapter apply to the system screens as shipped by Wang Laboratories, Inc. The descriptions may not apply to screens created or altered after shipment of the system.

7.1.1 System Screen Design

A system screen is normally divided into three main areas. The title of the screen appears at the top. The body of the screen, which contains the prompts by which you communicate with the computer, occupies the middle of the screen. The bottom of the screen is a message area containing two sections of its own. The left-hand section is reserved for error messages or other messages that appear only in special situations. (For instance, whenever you give the computer a command that takes a few seconds to process, a message appears to let you know the command is in progress. Otherwise, you might think the delay meant something had gone wrong.) The right-hand section of the message area lists the keys you use with that screen to give instructions to the computer. Figure 7-1, the Wang PC Main System Menu, illustrates a typical system screen.

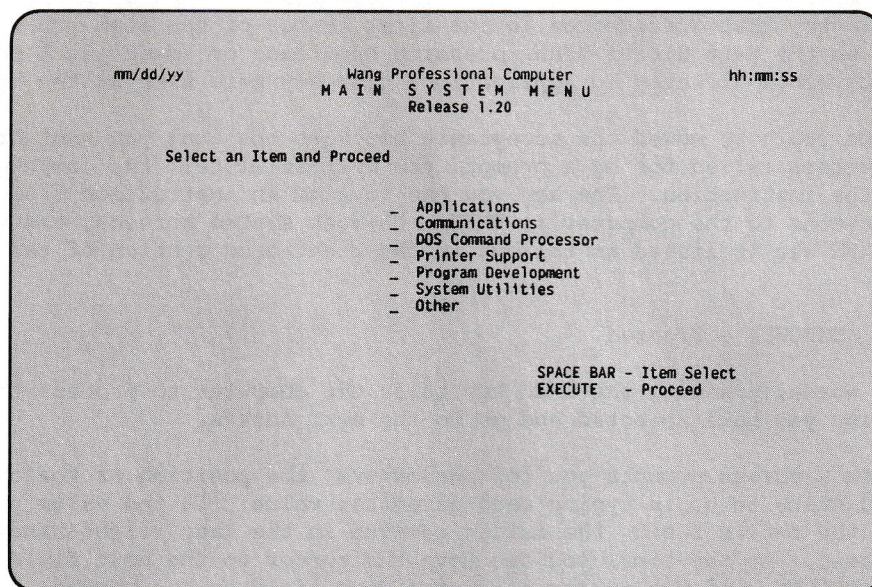


Figure 7-1. The Wang PC Main System Menu

7.1.2 Key Usage

A brief description of the major key functions for each screen also appears in the right-hand portion of the message area. In certain applications, some of the keys on the keyboard are nonfunctional. When you press a nonfunctional key, a beep sounds.

The keys named in the right-hand portion of the message area are usually not the only ones that are functional within a particular screen. The functions of some keys are so common that repeating them is unnecessary. For example, the message area does not tell you that you can use the standard typewriter keys to respond to a prompt. Similarly, the function of the HELP key, described in the next section, is the same for each screen and is therefore not listed in the message area.

When the body of the screen is a menu, the message area includes the following:

SPACE BAR - Item Select

This tells you to press the space bar in order to move the acceptance block from item to item. When the acceptance block is at the last item in the list, pressing the space bar moves it back to the first item.

On most menus, you can also move the acceptance block by pressing the alphabetic key that corresponds to the first letter of the item you want. For example, on the Main System Menu, pressing uppercase or lowercase A moves the acceptance block directly to Applications from anywhere else on the menu.

When you have moved the acceptance block to the item you want or entered the parameters called for by a prompt, you must still tell the computer to process the instruction. The key you use to send an instruction from the system screens to the computer is EXEC. On most system screens, the function of the EXEC key is listed as follows in the right-hand section of the message area:

EXECUTE - Proceed

In other words, pressing the EXEC key tells the computer to process the instruction you have selected and go to the next screen.

When a screen prompts you for parameters, the position of the cursor shows you where to begin typing each parameter value. If the value you enter takes up the entire field, the cursor remains in the last (right-hand) position in the field. At any time, you can move the cursor to the next field by pressing RETURN. If the cursor is at the last field on the screen, pressing the RETURN key moves it to the first field. On most system screens, the function of the RETURN key is listed as follows in the right-hand portion of the message area:

RETURN - Go To Next Field

To correct an error before moving to another field, you can use the BACK SPACE key or the West cursor control key to move the cursor to the left within the field. To correct an error in a previous field, use the RETURN key to bring the cursor back to that field.

7.1.3 The HELP Key

The HELP key is in the upper left-hand corner of the keyboard. Pressing this key gives you information about whatever screen is currently displayed. If the screen asks you to supply parameters, pressing HELP gives you information about the acceptable values for those parameters. If the screen is a menu, pressing HELP gives you information about whatever menu item the acceptance block is next to. To return from the Help screen to the original screen, press CANCEL.

7.2 THE DATE AND TIME SCREEN

Figure 7-2 shows the Date and Time screen. This screen allows you to enter the current date and time. The computer records this information in the disk directory. Entering the date and time before you edit a file or make a backup copy of it is a good habit to get into, since it ensures that you will always know which copy of a file is the most recent.

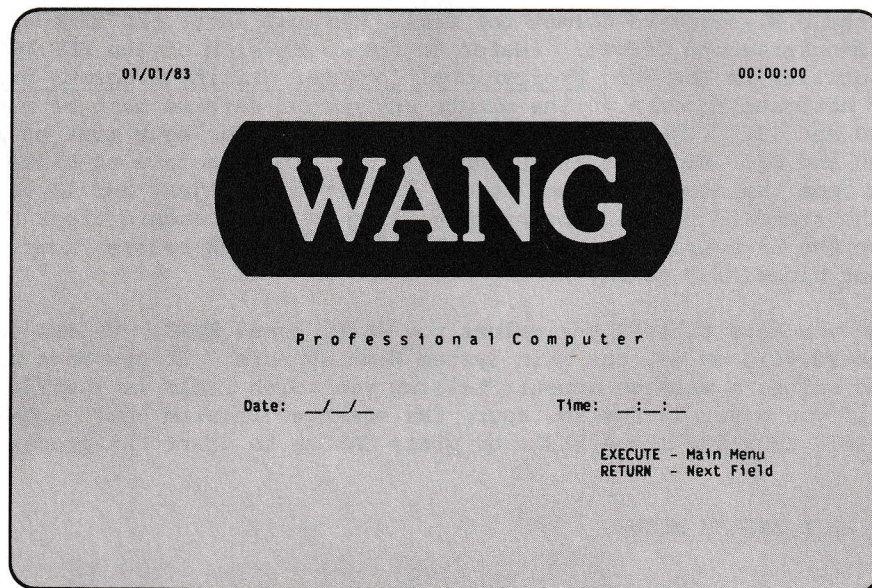


Figure 7-2. The Date and Time Screen

If the date and time are not necessary for what you plan to do during a session, you do not need to supply these values. Instead, press EXEC to go to the next screen. If you do not enter the time and/or date, the computer's clock increments the time from zero and the date from January 1, 1983. If you later need to set the date or time, you do not have to return to the Date and Time screen. The SET DATE and SET TIME utilities on the System Utilities Menu allow you to enter the current date and time. (Refer to The Wang Professional Computer Utility Programs User Guide for a description of these utilities.)

If you wish, you may respond to the prompt displayed on the Date and Time screen by entering the date or time or both. As long as the computer is on, an internal clock increments the time and date starting from the values you enter here. The computer knows whether the month has 28, 29, 30, or 31 days and whether the year is a leap year. You must use numeric keys to enter the date and time, as the computer does not recognize letters in these fields.

You must enter the numbers in 2-digit form. For example, enter 1 as 01, 2 as 02, and so on. Unless you are using a format other than the U.S. Standard format for the date, you must enter the date values in the month/day/year format. (To use a different format, refer to the discussion of the SET NATIONAL DEFAULTS utility in The Wang Professional Computer Utility Programs User Guide.) The month entry must be a number between 01 and 12. The day must be a number between 01 and 31. The year must be a number between 80 and 99.

In the U.S. standard format for time, you must enter the time values in the hour:minute:second format. (Refer to the discussion of the SET NATIONAL DEFAULTS utility in The Wang Professional Computer Utility Programs User Guide for other national formats.) The minute and second entries must be numbers between 00 and 59. (The second entry is optional.) The hour must be a number between 00 and 23. Midnight is 00; noon is 12. To translate pm times other than noon from the standard clock to the 24-hour clock, just add 12 to the hour on the standard clock. For example, 1 pm on the standard clock becomes hour 13 on the 24-hour clock, 2 pm on the standard clock becomes hour 14 on the 24-hour clock, and so on.

When you have entered the values you want, press EXEC. Unless you have entered an invalid value, the Main System Menu appears. If you have entered an invalid value, a message appears telling you which field is invalid. For example, if you enter 25 for the hour, the message "Invalid Hour" appears. Enter a valid hour and press EXEC, or press CANCEL to start the process again.

7.3 THE MAIN SYSTEM MENU

The system screen that appears after the Date and Time screen is the Wang PC Main System Menu (Figure 7-1). The column in the center of the Main System Menu is a list of options from which to choose. An acceptance block appears immediately to the left of the first item on the list. To select an option from the menu, press the space bar to move the acceptance block to the option you want. Then press EXEC.

The following sections give brief descriptions of each of the options on the Main System Menu, with references to more complete descriptions elsewhere in the Wang PC manuals.

7.3.1 Applications

Applications are programs you use to achieve a specific practical objective. For example, the Multiplan program helps you answer specific business and financial questions, and Wang PC Word Processing facilitates the writing, editing, and printing of text.

Using the Wang PC System Screens

As soon as you select the Applications option on the Main System Menu, the Applications Menu appears on the screen. (Refer to Figure 7-3.)

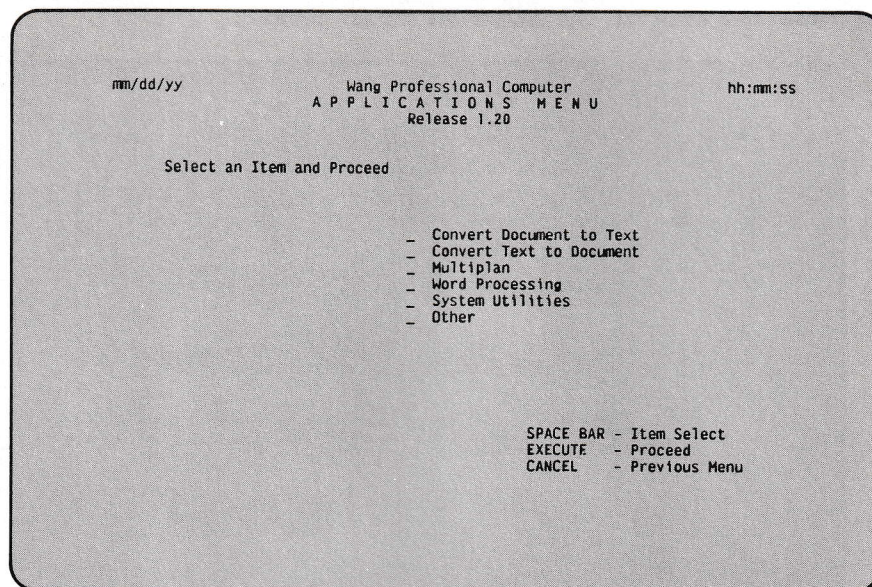


Figure 7-3. The Applications Menu

The options on this menu include PC Multiplan and Word Processing. The manuals that accompany these applications explain them in detail. This menu also contains two programs known as conversion aids. One of these conversion aids allows you to convert Wang Word Processing documents to the format of program files, such as Multiplan spreadsheets. The other conversion aid allows you to convert program files to Wang Word Processing documents. In addition, you can integrate program files with Word Processing documents, or Word Processing documents with program files.

If you have not purchased Multiplan or Word Processing with your system, you will not be able to access the options on the Applications Menu. You can use the MODIFY SYSTEM MENUS utility to delete them, or to add the names of other options you have purchased.

7.3.2 System Utilities

System utilities are general purpose programs that support other functions of the computer. For example, system utilities allow you to add or delete files from a diskette, reset the date or time, combine files, or make copies of diskettes. You are likely to use the System Utilities option frequently.

As soon as you select the System Utilities option, the System Utilities Menu appears on the screen. Figure 7-4 illustrates this menu. The Wang Professional Computer Utility Programs User Guide discusses the System Utilities Menu and each of the items on it in detail.

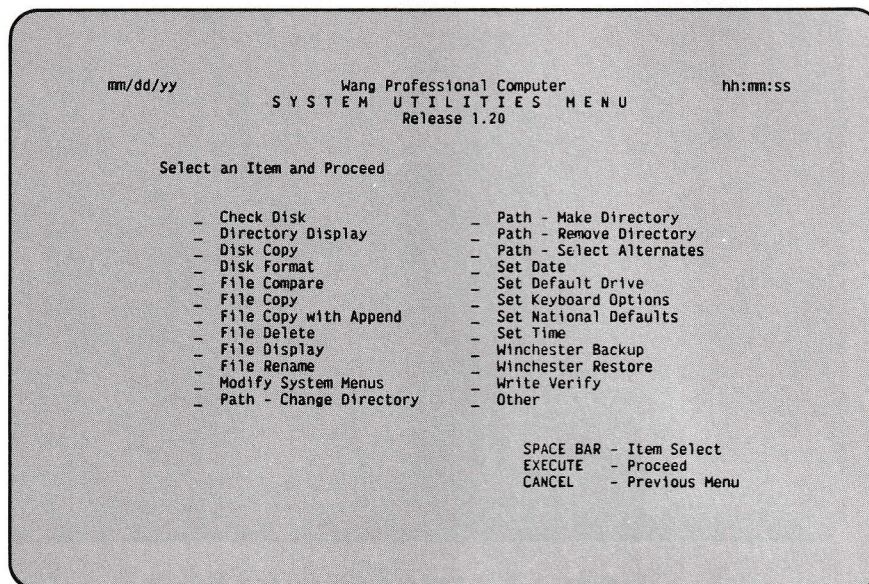


Figure 7-4. The System Utilities Menu

7.3.3 Program Development

The Program Development Menu lists programs that are useful for writing, correcting, modifying, and running other programs. For example, the Program Development Menu lists an option named BASIC. Selecting this option allows you to use the programming language known as interpretive BASIC. The Program Development Menu also lists an option named Editor that allows you to create and modify text files such as reports and letters.

When you select Program Development from the Main System Menu, the Program Development Menu appears. Figure 7-5 illustrates the Program Development Menu.

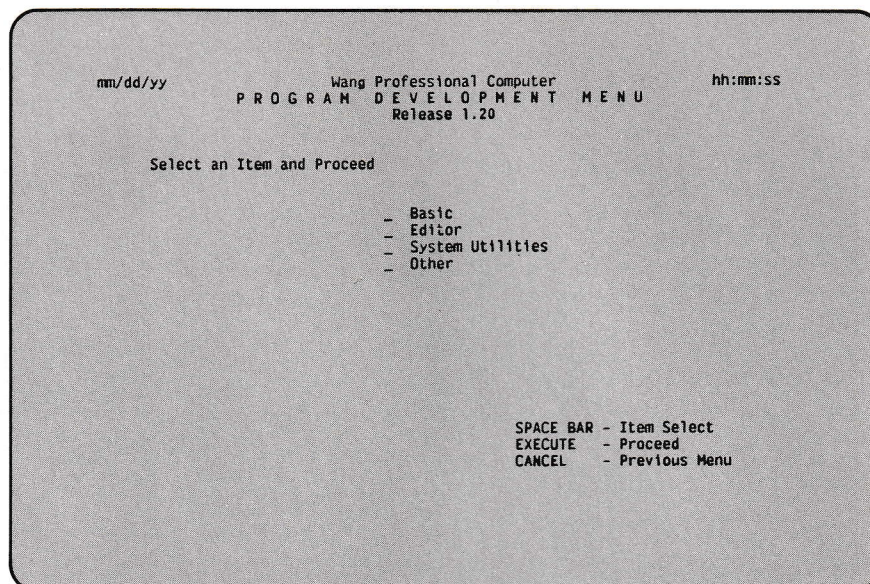


Figure 7-5. The Program Development Menu

Refer to The Wang Professional Computer BASIC Language Guide for a description of interpretive BASIC. Refer to The Wang Professional Computer Program Development Guide for a description of the other options on this menu.

7.3.4 Communications

When you select Communications from the Main System Menu, the Communications Menu appears. (Refer to Figure 7-6.) The options on this menu allow the Wang PC to serve as a workstation on Wang 2200, VS, OIS, or Alliance systems or to communicate with a host computer. As a workstation on any of these multiuser Wang systems, the Wang PC has access to the software, data, and resources of that system. Communicating with host computers allows you to access time-sharing systems and to speedily collect, transfer, and analyze data, including data from business information services and commercial data bases.

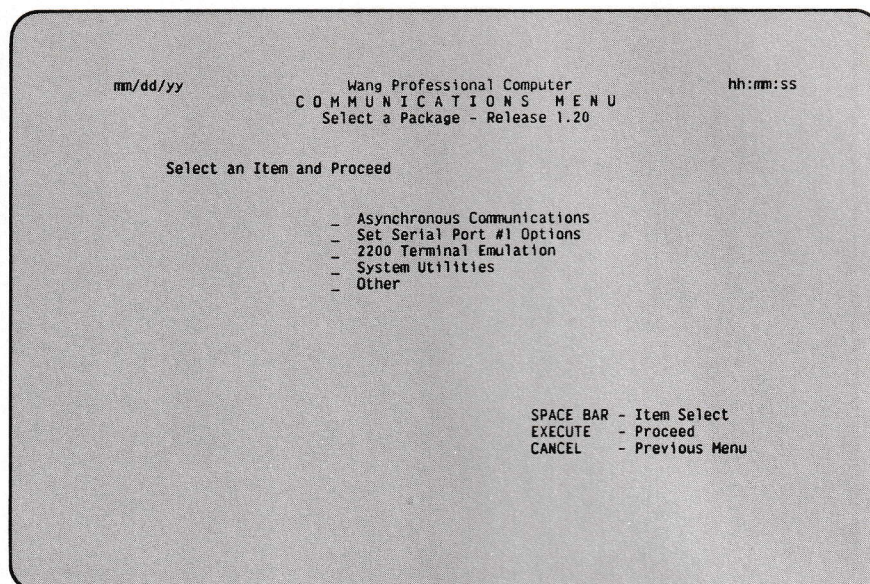


Figure 7-6. The Communications Menu

The items on the Communications Menu are optional on the Wang PC. If you have not purchased the appropriate software, you cannot use the corresponding option on the Communications Menu. Refer to the appropriate communications manuals for descriptions of the Communications Menu options.

7.3.5 Printer Support

When you select the Printer Support option from the Main System Menu, the Printer Support Menu shown in Figure 7-7 appears.

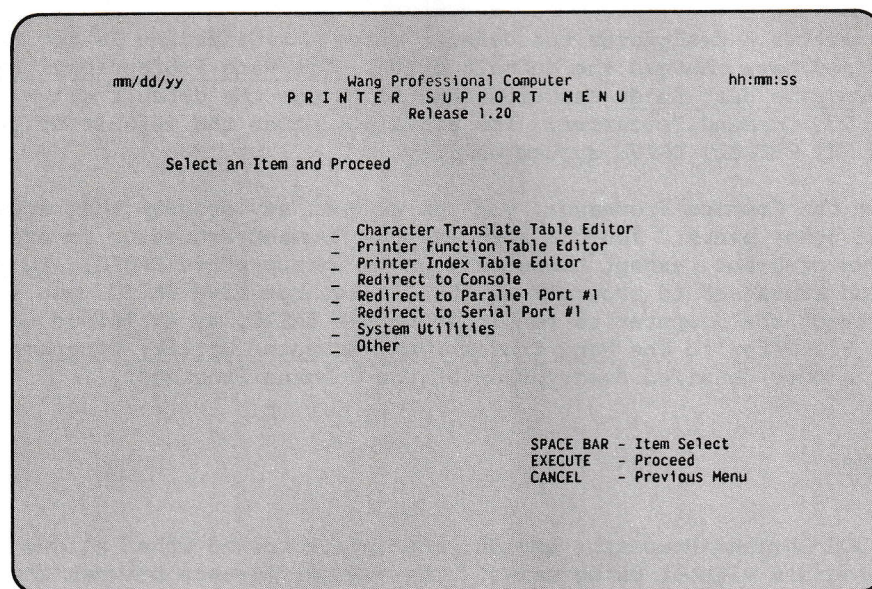


Figure 7-7. Printer Support Menu

This menu lists options that create the printer table structures that are necessary for a printer driver to function with a given printer. The Printer Function Table Editor and Character Translate Table Editor options let you edit and/or create printer table and character translate table files. You then enter the names of these files in the printer index table with the Printer Index Table Editor option. The Printer Support Menu also includes three print redirection options that allow you to direct the system to the console, parallel port, or serial port.

Appendix I explains the options on the Printer Support Menu in detail.

7.3.6 DOS Command Processor

The DOS Command Processor option offers you a way to give instructions to the computer without using menus. When you select this option from the Main System Menu, the following prompt, known as the DOS prompt, appears on the screen:

A: _

You respond to this prompt by typing in a DOS command (refer to The Wang Professional Computer Utility Programs User Guide) or a file specification and then pressing RETURN. A file specification consists of a 1- to 8-character file name, optionally preceded by a directory path, and optionally followed by a 1- to 3-character extension. Refer to The Wang Professional Computer Utility Programs User Guide for a complete explanation of file specifications.

The letter A designates the default drive. A different letter may appear if you have changed the default drive. The Wang Professional Computer Utility Programs User Guide describes how to change the default drive while using the DOS Command Processor. You can also change the default drive by using the SET DEFAULT DRIVE system utility.

From the Command Processor, you can execute any program that appears on any of the other menus. You can also use the Command Processor to execute any of your own programs, except those written in interpretive BASIC. To get from the Command Processor to programs written in interpretive BASIC, you must first instruct the computer to run interpretive BASIC, as explained in Section 7.5. Refer to The Wang Professional Computer Utility Programs User Guide for a more detailed description of the Command Processor.

7.3.7 Other

Like the DOS Command Processor option, the option called Other allows you to execute programs without using menus. The main difference between these two options is the screen each one returns to when a program called from it has executed. The DOS Command Processor option returns to the DOS prompt. The Other option returns to the Main System Menu. Another difference is that you cannot execute batch command files (refer to The Wang Professional Computer Utility Programs User Guide) from the Other option.

When you select Other from the Main System Menu, the following prompt appears:

File Spec:

You respond to this prompt by supplying a file specification for the program you want to execute. To execute the program, you can press either the EXEC or the RETURN key.

The drive you request in the file specification for the Other option becomes the default drive for the duration of the program you specify. Thus, if that program accesses another file, the computer looks for the file on the drive you requested, unless you supply a different drive designation for the file. However, if the program you execute from the Other option changes the default drive while executing, the drive it establishes remains in effect when you return to the Main System Menu.

Using the Wang PC System Screens

7.4 LOADING AND EXITING A SELECTION

When you use any of the methods just described to instruct the computer to load and run a program, the computer searches for that program on a diskette or on the Winchester. If you make a selection from the Applications, System Utilities, Program Development, or Communications Menus, the computer searches for the program on the default drive. If you execute a program in BASIC or through the DOS Command Processor or Other options, the computer uses the default drive unless you designate another drive in the file specification.

If it finds the program, the computer loads it into memory and executes it. If it does not find the program, the computer displays a "File not found" message. In this case, in order to execute the program, you must load a diskette containing the program in the proper drive and press any key but CANCEL. You do not have to repeat the process of selecting the program. For example, if the computer could not find the FILE COPY program you selected from the System Utilities Menu, then as soon as you put the correct diskette in the default drive and press any key except CANCEL, the computer once again searches the diskette for FILE COPY.

To save time, it is better to mount a diskette containing a program before you call that program. Once you have loaded the system files, you can remove that diskette from the default drive and insert another diskette before calling your program.

When the computer has completed running the program you requested, it returns you to the same screen from which you selected the program. If you requested a program from the DOS Command Processor, the system returns you to the DOS prompt. To return to the Main System Menu from the DOS prompt, type the word EXIT and press RETURN.

If you requested a program from one of the options listed on the Main System Menu, you return to the menu you selected. From there, you can return to the Main System Menu by pressing CANCEL. If you requested a program from the Other option on the Main System Menu, you return to the Main System Menu.

Often you exit from a program by responding to a prompt displayed by the program itself. For instance, when the DISK FORMAT system utility has finished formatting a diskette, it asks you whether you want to format another diskette by displaying the following prompt:

Format another (Y/N)?_

To return to the System Utilities Menu, enter N and press EXEC.

In order for you to return to the place from which you requested a program, however, the default drive must contain a disk with the system files. If it does not, a message appears to inform you of this. To return to the place from which you requested the program, mount a diskette with the system files in the default drive and press any key.

As you work with your Wang PC, you may find it easier to put all the files you usually use on one diskette. This eliminates the need for you to switch diskettes in order to ensure that the file you want to access is in the default drive. Appendix J shows you how to do this.

7.5 LOADING AND RUNNING INTERPRETIVE BASIC

All Wang PC systems include the interpretive BASIC programming language. Using BASIC, you can write, revise, store, and run your own programs. To call BASIC from the Program Development Menu, select the Program Development option from the Main System Menu. Make sure that the acceptance block is next to the BASIC option. Replace System Diskette I with System Diskette II and press EXEC. To call BASIC from within the DOS Command Processor or from the Other option on any menu, make sure that System Diskette II is in the default drive, then type the word BASIC and press RETURN.

When you select BASIC, the letters "Ok" appear on the upper left-hand side of the screen. This is the BASIC prompt. You begin giving instructions to BASIC at the cursor position below the prompt. If you want to load and run a BASIC program that already exists, type Load" followed by the program name and press the RETURN key. When the Ok prompt appears again, type RUN and press RETURN to execute the program. Alternately, you can press PF 3, enter the program name, and press RETURN. You then need only press PF 2 to start program execution. Refer to The Wang Professional Computer BASIC Language Guide for a further discussion of this method.

When your BASIC program has executed, the BASIC prompt returns to the screen. If you do not wish to use BASIC further, you can return to the screen from which you entered BASIC by typing the word SYSTEM after the BASIC prompt, inserting System Diskette I, and pressing the RETURN key. You can also exit from BASIC by first inserting System Diskette I in the default drive, and then typing the system restart sequence: 2ND + COMMAND, followed by CANCEL. When you exit using this method, the Date and Time screen, not the Main System Menu, appears on the monitor.

For instructions on how to create, store, and modify programs in BASIC, refer to The Wang Professional Computer BASIC Language Guide.

8

USING YOUR WINCHESTER DISK DRIVE

Overview

Copying the System Diskettes
to Your Winchester Disk

Controlling Your System
Through the Winchester Disk

Starting Your System from the Winchester Drive

Loading an Application

CHAPTER 8

THE WINCHESTER DISK DRIVE

8.1 OVERVIEW

A Winchester disk drive is an auxiliary storage device. It contains a read/write head that can read information from the disk or write information onto the disk. Unlike a diskette drive, the Winchester is a sealed unit that stores information on hard disk.

When the disk in the Winchester drive is correctly formatted, it can store up to 10MB of information, or more than twenty-six times the capacity of a single 360KB diskette. A more dramatic way of illustrating the amount of information you can store on a 10MB Winchester disk is to convert the number of megabytes into an equivalent number of typewritten pages. A full 10MB Winchester disk can hold the equivalent of approximately 4,000 single-spaced typewritten pages.

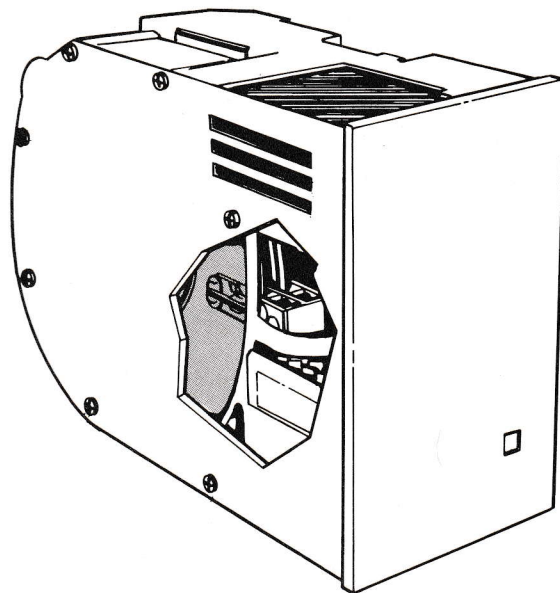


Figure 8-1. Inside a Winchester Drive

The Winchester Disk Drive

The front of your Winchester disk drive has a red indicator light that lights up whenever the drive is reading or writing. Your Winchester can hold any software, including the system software. You can start your system through the Winchester once you copy the system software onto it. Once you have done this, you can access all of the system menus from the Winchester drive. The Winchester is known as Drive C within the Wang PC system.

Sections 8.2 through 8.4 discuss the procedures for copying System Diskettes I and II to the Winchester disk and subsequently starting your system from this drive. Before you perform these tasks, you should read Section 9.3, which provides instructions for installing your Winchester drive. You should also read the section in The Wang Professional Computer Utility Programs User Guide that explains path names and multilevel directories.

8.2 COPYING THE SYSTEM DISKETTES TO YOUR WINCHESTER DISK

Use the following steps to guide you through the process of copying the system software onto the Winchester disk.

CAUTION:

The following procedure formats the Winchester disk and in so doing erases all of the files currently on it. If you want to save any of the files on the Winchester disk, copy those files onto diskettes before you begin this procedure.

STEP 1: Start your system with System Diskette I in Drive A, if you have not already done so.

STEP 2: Select the System Utilities option from the Main System Menu.

STEP 3: Select the DISK FORMAT utility from the System Utilities Menu. You should see the DISK FORMAT display shown in Figure 8-2.


```

SYSTEM UTILITIES - DISK FORMAT

Drive: A

Define Disk Storage Capacity
_ 360 KB   _ 320 KB   _ 180 KB   _ 160 KB   _ Winchester

EXECUTE - Proceed
CANCEL  - Return to Menu
RETURN  - Go to next field

```

Figure 8-2. The DISK FORMAT Display

STEP 4: Change the A in the Drive field to a C and press RETURN. You have now instructed the system to format the Winchester disk in Drive C.

STEP 5: Use the space bar to set the acceptance block in the Define Disk Storage Capacity field next to the word Winchester. Press EXEC to begin the formatting process.

STEP 6: When the system finishes formatting the Winchester, return to the System Utilities Menu and select the FILE COPY utility.

NOTE:

Do not use the DISK COPY utility; the Wang PC does not support the DISK COPY utility on the Winchester.

STEP 7: The Input File field should be Drive A. Enter the Volume ID or skip the Volume ID field. Enter the all-purpose file specification *.* in the File ID field. This set of responses instructs the system to copy every file on the diskette in Drive A. Press EXEC.

The Winchester Disk Drive

STEP 8: After you press EXEC, a screen display appears. (Refer to Figure 8-3.) This display asks you to enter one of three options for copying existing files to the output disk. Since no files exist on the Winchester, it does not matter which option you choose for this procedure. (Refer to The Wang Professional Computer Utility Programs User Guide for an explanation of these options). Press EXEC.

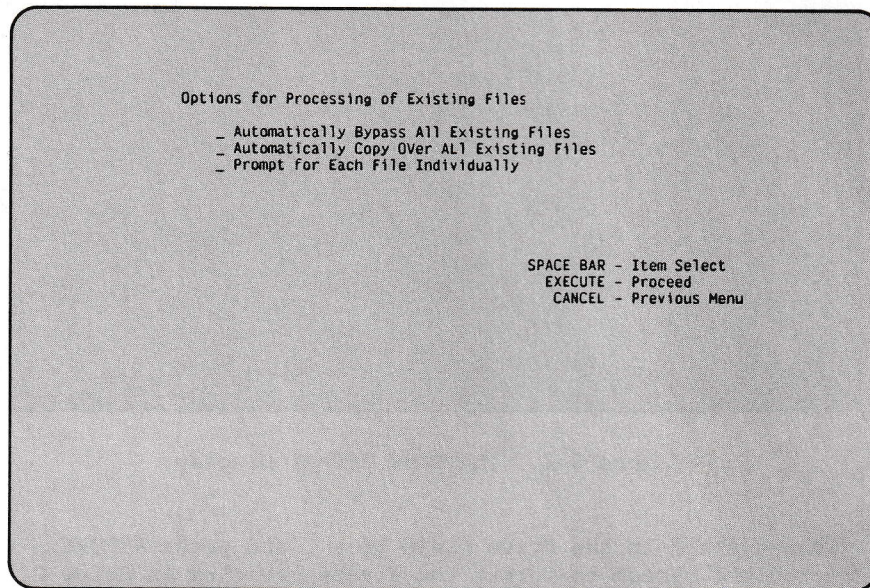


Figure 8-3. All-Purpose File Specification Processing Options

STEP 9: After you press EXEC, the parameters for the Output File appear on the utility display. Change the Output File field to Drive C. Enter the Volume ID or skip the Volume ID field. Leave the File ID field, **, as it is. This set of responses completes the FILE COPY utility by instructing the system to copy every file on Drive A over to Drive C, without changing any of the file names.

STEP 10: Press EXEC to begin the copying process. Notice that the indicator lights on both the diskette drive and the Winchester drive alternately go on and off as information is transferred between these two storage devices. When the system completes this process, you have successfully copied every file on System Diskette I onto your Winchester disk.

STEP 11: To copy System Diskette II to your Winchester, take System Diskette I out of Drive A. Replace it with System Diskette II. Repeat the process starting with Step 7.

NOTE:

If you have version 1.0 of the start PROM, the Winchester startup screen also includes the messages ***22 DRIVE B DEFECTIVE and 50 OR MISSING. These are merely informational messages that indicate that your system does not have a second diskette drive. These messages do not mean that you have a problem with your system.

STEP 3: After a 5-second delay, the Date and Time screen appears. Enter the date and time next to the appropriate prompts. Press EXEC to proceed to the Main System Menu.

You have now started your system through the Winchester drive. The system is running under the control of the system software located on the Winchester disk. If for any reason you need to restart your system, use the same keystroke sequence (2ND + COMMAND simultaneously, and then CANCEL) you use with Drive A. After you enter the restart key sequence, the system bypasses the power-on diagnostics and displays the Start-up screen.

8.5 LOADING AN APPLICATION

The process you use to load an application from the Winchester while you're using the Main System Menu is identical to the process you use with diskettes. Follow these steps to load an application.

STEP 1: Start your system from the Winchester, as described in Section 8.4. The Main System Menu appears on your screen.

STEP 2: Select the Applications option from the Main System Menu.

STEP 3: Insert the diskette for your application in the diskette drive. If your application is listed on the Applications menu, select it and press EXEC. Your application should now be running.

NOTE:

If your application is not listed on the Applications menu, check to see if it appears under another Main System Menu selection such as Communications or Program Development. If the application isn't listed on the menus, you need to use the MODIFY SYSTEM MENUS utility to add it to the appropriate menu. The MODIFY SYSTEM MENUS utility is described in The Wang Professional Computer Utility Programs User Guide.

9

ELECTRONICS UNIT OPTIONS

Understanding Cards
Installing a Card
Removing the Cover of the Electronics Unit
Unpacking the Card
Unscrewing the Panel
Sliding Out the Blank Panel
Aligning the Card
Inserting the Card
Replacing the Cover of the Electronics Unit
Reconnecting Your System
Testing Your Card
Installing a Winchester Disk Drive
Installing a Second Diskette Drive
Installing the Electronics Unit on the Desk Clamp

CHAPTER 9 ELECTRONICS UNIT OPTIONS

This chapter provides the installation procedures for all the options currently available on the Wang PC electronics unit. These options include the Winchester disk drive, the second diskette drive, the optional desk clamp, and various option cards.

9.1 UNDERSTANDING CARDS

All Wang PC option cards have certain characteristics in common. They all contain a set of circuits that increase the capabilities of your Wang PC. Each card has a connector on its bottom edge containing 43 pins on each side, and a black metal panel on its vertical edge. (Refer to Figure 9-1.) Some cards have connectors built into these back panels; others do not. Back panels that have no connectors have a number of small holes covering them so that you can distinguish them from blank panels, which have no cards attached to them at all. These blank panels interlock with the cards installed in your electronics unit to form a solid back panel. Since each blank panel represents an available expansion slot, you can tell at a glance whether you have room to install any additional cards.

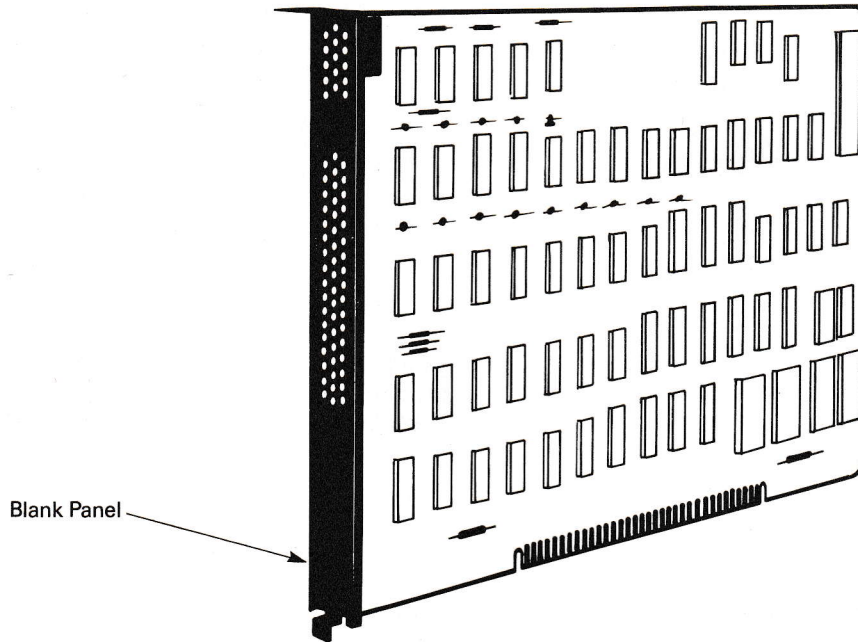


Figure 9-1. The Generic Wang PC Card

9.2 INSTALLING A CARD

As you read this section, you may find that your system is different from the one shown in the illustrations. For example, your system might have different types of cards already installed in different expansion slots. Regardless of any inconsistencies between the illustrations and what you see in your system, you can use the information presented in this section to help you install any card in any Wang Professional Computer system.

If you're working with a new Base Unit, the expansion slots are empty when you begin to install your first card. (Refer to Figure 9-3.) All preconfigured systems, on the other hand, will have at least the Wang Monochrome Monitor card installed in an expansion slot. You can check which cards are installed in your system by reading the name printed on the top of the circuit side of each card.

You can install any of the following cards in your electronics unit:

- CP/M-80 Emulation card -- This card allows you to use software written for the CP/M-80 operating system.
- Wang Monochrome Monitor card -- This card supports the Wang Monochrome Monitor.

Electronics Unit Options

- Wang Graphics card -- You can use this card in conjunction with the Wang Monochrome Monitor card to provide your Wang Monochrome Monitor with graphics capabilities.
- Industry-standard Monitor/Graphics card -- This card supports monitors other than the Wang Monochrome Monitor.
- Memory Expansion card -- This card permits you to add up to 512KB of memory, in 128KB modules, to the original 128KB that is standard with your system.
- Telecommunications cards -- There are several types of telecommunications cards that perform data formatting and control functions to facilitate data transmission and reception.

The installation procedures for all of these cards are virtually identical. You must, however, observe the following restrictions in positioning and installing your cards:

- You can only use the Wang Graphics card in conjunction with the Wang Monochrome Monitor card. You must position the Wang Graphics card in the slot behind the Wang Monochrome Monitor card. (For example, if the Wang Graphics card is in Slot 3, you must install the Wang Monochrome Monitor card in Slot 2.) You must also install the Wang Graphics card first. Use the short jumper cable shown in Figure 9-2 to connect the two cards.

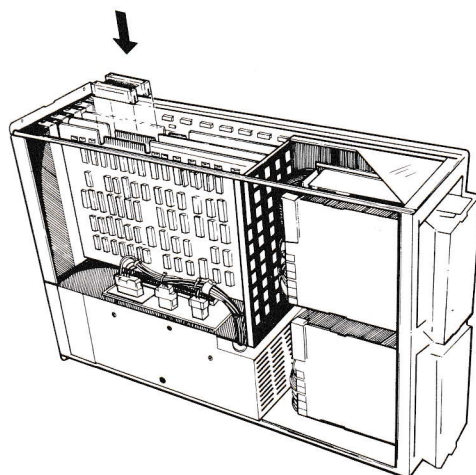


Figure 9-2. Jumper Cable

- If your system has a Winchester drive, you must install the Winchester Controller card in the slot furthest from the System card. Figure 9-3 shows the expansion slot numbers.

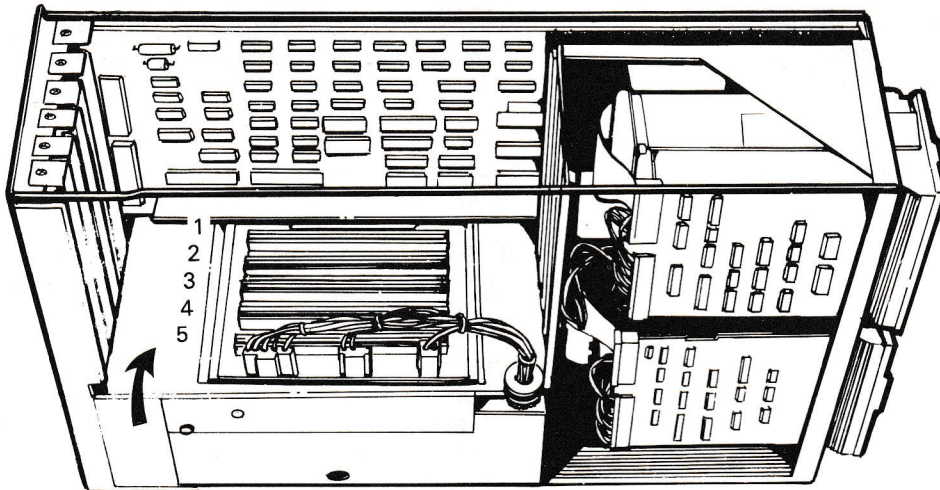


Figure 9-3. Expansion Slot Numbers

The procedure for installing a card in your electronics unit consists of the following steps:

- Removing the cover of the electronics unit
- Unpacking the card
- Unscrewing the panel
- Sliding out the blank panel
- Aligning the card
- Inserting the card into the guides
- Replacing the cover of the electronics unit
- Reconnecting your system
- Testing your card

The following pages provide a step-by-step description of this procedure.

9.2.1 Removing the Cover of the Electronics Unit

Before you can install a Winchester drive, you must remove the cover of the electronics unit.

Electronics Unit Options

STEP 1: Make sure the power switch is turned off. Then, disconnect the power cord from the electronics unit using a standard screwdriver. Disconnect your monitor, keyboard, and any remaining printer or communications cables. The electronics unit should be free of any external cables before you proceed. (Refer to Figure 9-4.)

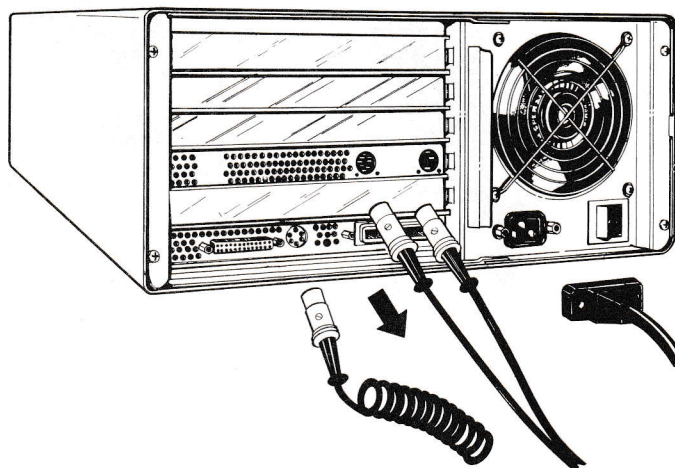


Figure 9-4. Disconnecting Your System

STEP 2: Position your electronics unit as shown in Figure 9-5. Be sure that there is room on your desk for the chassis to slide completely out of its cover toward you.

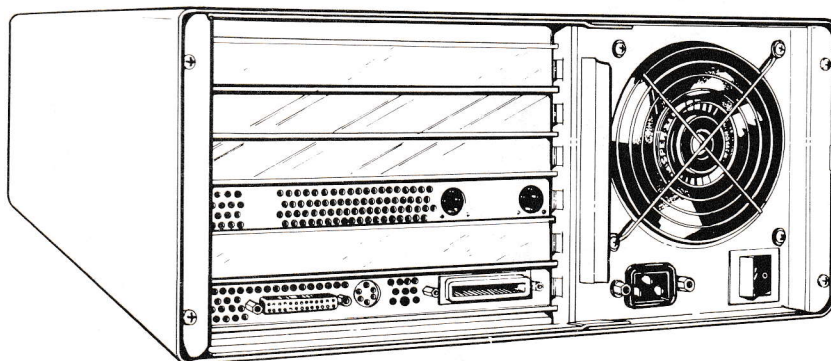


Figure 9-5. Positioning the Electronics Unit

Electronics Unit Options

STEP 3: Unscrew the four Phillips screws located in the corners of the back panel, as shown in Figure 9-6. Put these screws safely to one side; you will need them when you replace the cover.

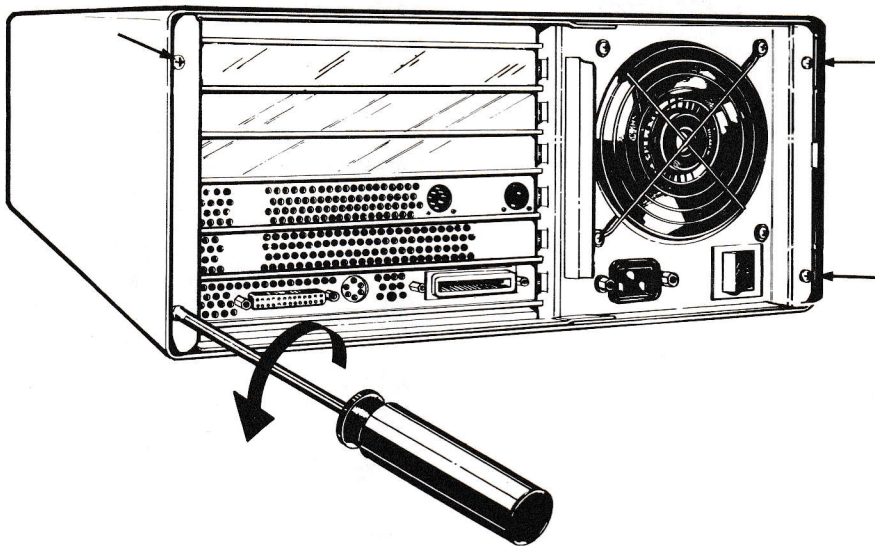


Figure 9-6. Removing the Four Cover Screws

STEP 4: Put one hand on the handle on the back panel. Place your other hand firmly on top of the electronics unit as shown in Figure 9-7.

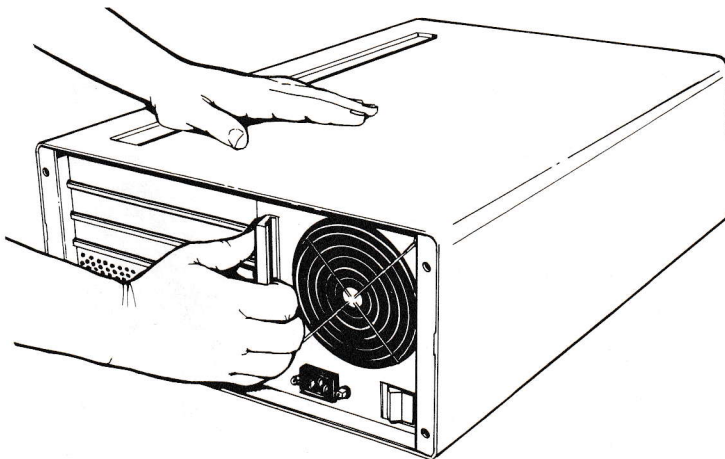


Figure 9-7. Preparing to Remove the Cover

Electronics Unit Options

STEP 5: Pull the chassis out of the cover, as shown in Figure 9-8.

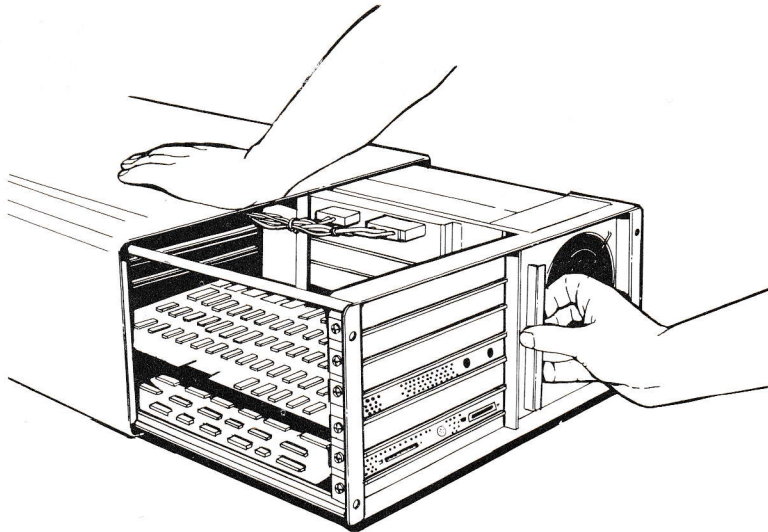


Figure 9-8. Removing the Cover

STEP 6: Move the cover off to one side of your work area.

STEP 7: Place the electronics unit in a vertical position, as shown in Figure 9-9. Remove the hold down device from the top of the electronics unit by following the directions on the label.

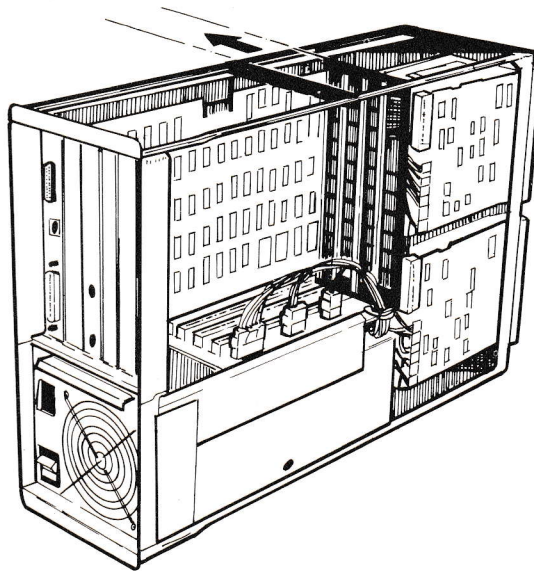


Figure 9-9. Working Position of the Electronics Unit

Electronics Unit Options

9.2.2 Unpacking the Card

Unpack the card as shown in Figure 9-10. Be sure to open the envelope containing the card along the edge indicated, or you may damage the card in the process of unpacking it. Keep the packing material with your other Wang PC packing material.

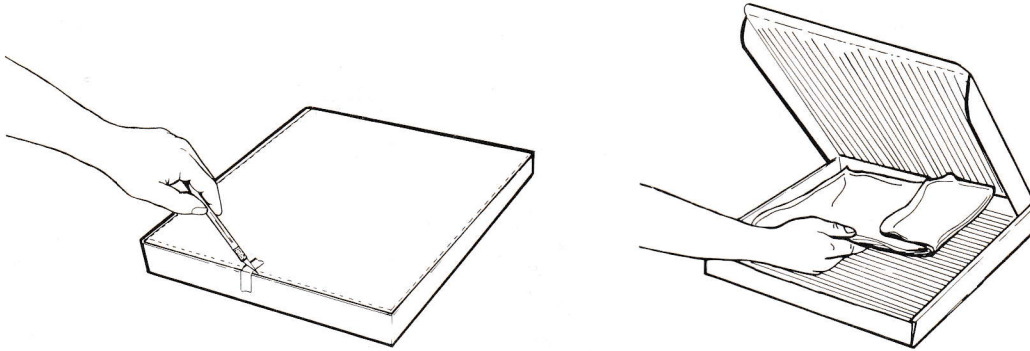


Figure 9-10. Unpacking a Card

9.2.3 Unscrewing the Panel

Remove the screw from the top of the panel that occupies the space where you want to insert a card. (Refer to Figure 9-11.) Put the screw to one side; you will need it again a little later.

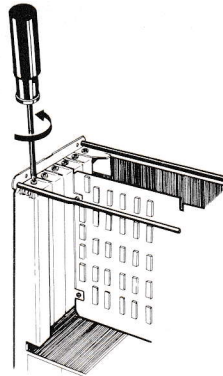


Figure 9-11. Unscrewing a Panel

9.2.4 Sliding Out the Blank Panel

Slide the blank panel out of its space in the electronics unit. You can do this by pushing up on the panel from underneath, as shown in Figure 9-12. Slide the panel up and out of the electronics unit.

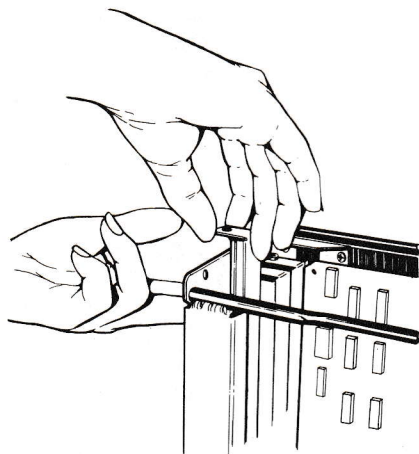


Figure 9-12. Removing a Panel

9.2.5 Aligning the Card

Position the card you want to install above the electronics unit, so that its back panel is aligned with the other back panels. (Refer to Figure 9-13.)

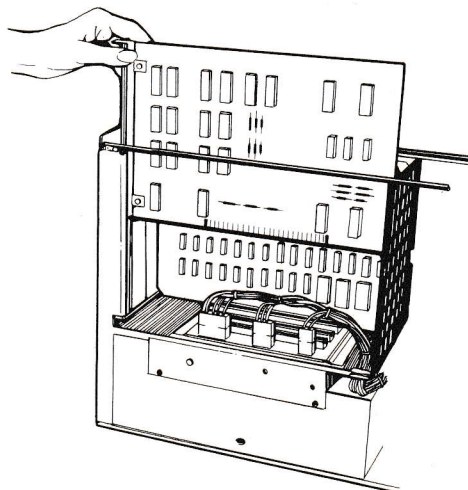


Figure 9-13. Aligning the Card

9.2.6 Inserting the Card

STEP 1: Slip the front of the card into the card guide while fitting its back panel into the interlocking back panels on either side of it.

STEP 2: Firmly press the set of pins on the lower edge of the card into place while fitting the tooth on the bottom of the panel into the slot in the chassis. The lip on top of the panel should fit flush on top of the chassis. The hole in the card's panel should line up with the hole in the chassis. When the holes are aligned, use the screw you removed from the blank panel to secure the card to the chassis. Your installed card should look like the one in Figure 9-14.

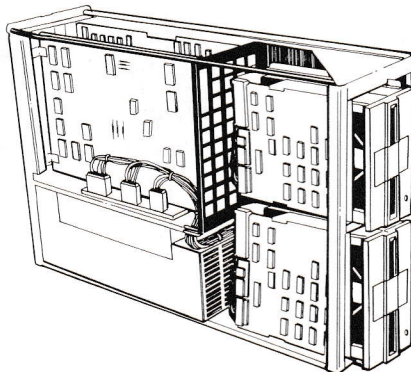


Figure 9-14. Completed Card Installation

STEP 3: If you are installing both the Monitor and Graphics cards, connect the two cards with the short jumper cable. When both cards are installed, the card assembly should look like the one in Figure 9-2.

STEP 1: Position the chassis and the cover as shown in Figure 9-15.

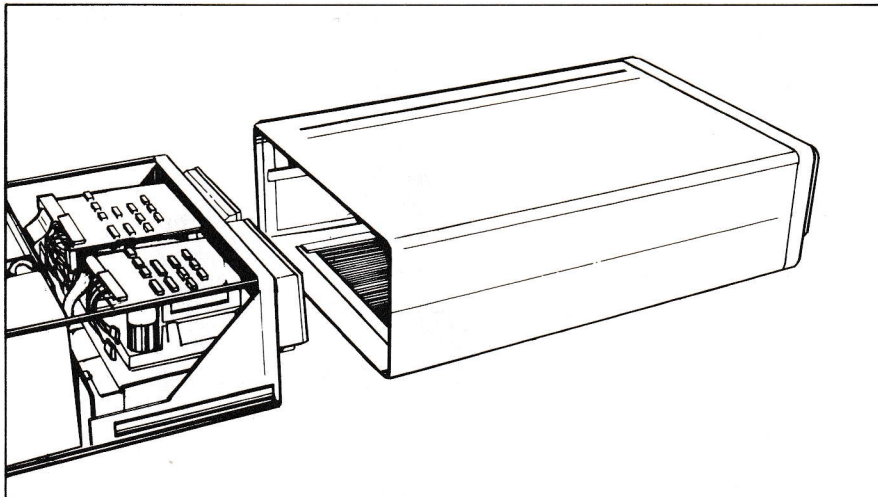


Figure 9-15. Preparing to Replace the Cover

STEP 2: Grasp each side of the chassis and lift it over the bottom edge of the cover. Slowly slide the electronics unit into the cover (as shown in Figure 9-16), placing one hand on the cover while using the other hand to push on the handle of the electronics unit.

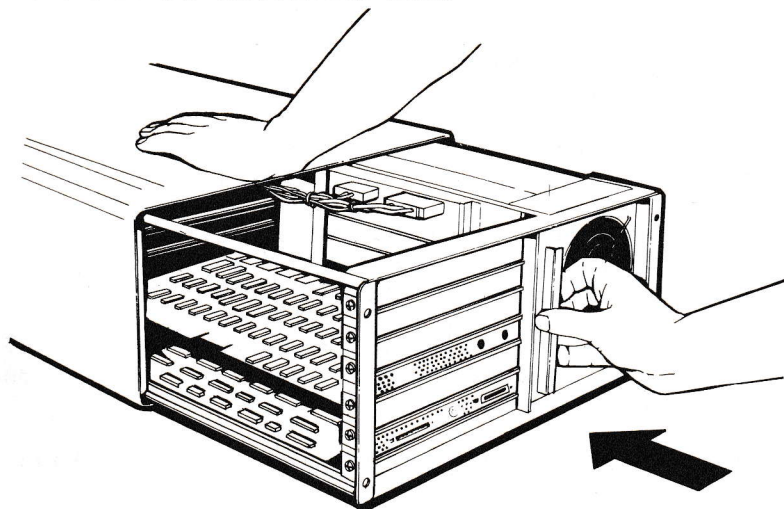


Figure 9-16. Replacing the Electronics Unit in Its Cover

NOTE:

If you have trouble sliding the electronics unit into the cover, pull it back out. Check to see that the cables are threaded so that they won't catch on the cover as you slide the chassis back in.

Electronics Unit Options

STEP 3: Push the electronics unit completely into its cover. The disk drives should fit snugly inside their housings. The four screw holes on the back panel should line up with the screw holes in the cover. Replace the four screws in the corners of the cover, as shown in Figure 9-17.

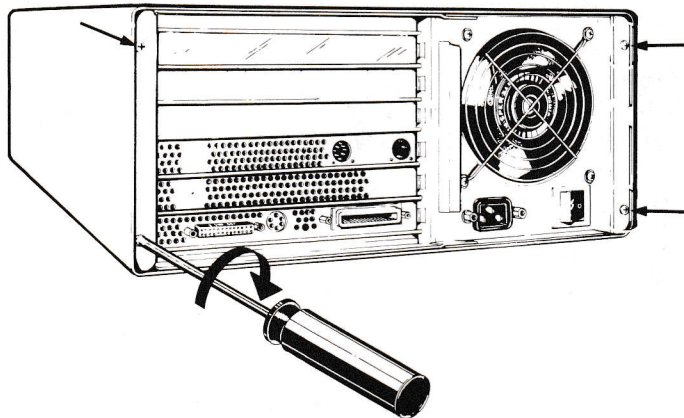


Figure 9-17. Reattaching the Cover of the Electronics Unit

9.2.8 Reconnecting Your System

This section presents basic instructions for reconnecting your system. If you require more specific instructions, read Sections 2.4 through 2.9.

Remember that your video card may appear in a different position from the one shown in the illustrations. Remember that no matter where this card is located, the process of connecting is exactly the same.

STEP 1: Position the electronics unit as shown in Figure 9-18. Plug the keyboard cable into its connector. Remember to align the connectors before you attempt to make this connection.

STEP 2: Reconnect both sets of video cables, as shown in Figure 9-18.

Electronics Unit Options

STEP 3: Make sure the power switch is set in the OFF position. Reconnect the power cord, as shown in Figure 9-18.

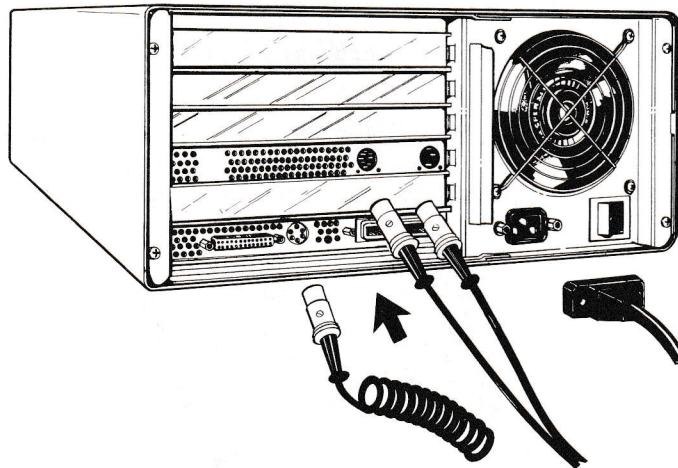


Figure 9-18. Reconnecting Your System

9.2.9 Testing Your Card

After installing a card, you should start your system as described in Section 3.1. Each time you start your system, the power-on diagnostics test all the system devices, including the card you've added. If the power-on diagnostics detect any problems with your card, an error message like the following will appear on the Start-up screen: *21 VIDEO CARD IN SLOT 3 DEFECTIVE. If this or a similar message appears, reinstall the card and restart your system. If you receive the same message on the Start-up screen, call the support personnel at the Wang Professional Computer Assistance Center at 1-800-343-1098 for an evaluation of the problem.

9.3 INSTALLING A WINCHESTER DISK DRIVE

Follow the procedures outlined in this section to add a Winchester disk drive to your system. The only tool you need to complete this installation is a #1 Phillips screwdriver. This process consists of the following steps:

- Removing the cover of the electronics unit
- Installing the Winchester Controller card
- Removing the disk drive mounting plate or Drive B
- Removing the ribbon cable from the System card
- Installing the Winchester drive
- Replacing the cover of the electronics unit
- Reconnecting your system
- Testing your Winchester drive

The first step (removing the cover of the electronics unit) is described in Section 9.2.1. The following sections describe the remainder of the process, beginning with installing the Winchester Controller card.

9.3.1 Installing the Winchester Controller Card

Follow the procedures in Sections 9.2.2 through 9.2.6 to insert the Winchester Controller card in the slot furthest from the System card. (Refer to Figure 9-3.) Once this card is installed, your unit should look like Figure 9-19.

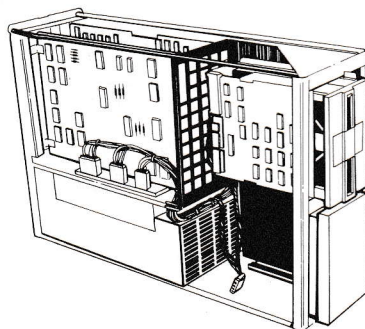


Figure 9-19. The Installed Winchester Controller Card

NOTE:

You must install the Winchester Controller card in the highest numbered slot so that the cables can be routed correctly from the drive to the connectors on the card. Improper routing of these cables can damage the cables and create problems when you try to replace the cover of the electronics unit.

9.3.2 Removing the Disk Drive Mounting Plate

Use the following procedure to remove the disk drive mounting plate.

STEP 1: Remove the screw holding the blank drive compartment cover and disk drive mounting plate to the chassis. Remove the drive compartment cover by squeezing its sides and pulling it from the chassis.

Electronics Unit Options

STEP 2: Slide the disk drive mounting plate completely out of the drive compartment. (Refer to Figure 9-20.) You will later attach this plate to the Winchester drive.

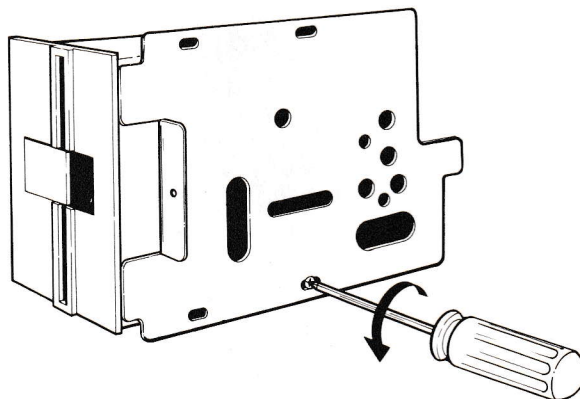


Figure 9-20. Removing the Disk Drive Mounting Plate

9.3.3 Removing Drive B

If you need to remove Drive B before installing your Winchester drive, use the following procedure.

STEP 1: Remove the screw holding Drive B in the chassis. Slide Drive B halfway out of the chassis.

STEP 2: Rock the ribbon cable off the back of Drive B, as shown in Figure 9-21.

STEP 3: Pull the 4-pinned power cable from the 4-pinned connector on Drive B, as shown in Figure 9-21. You will later attach this cable to the Winchester drive.

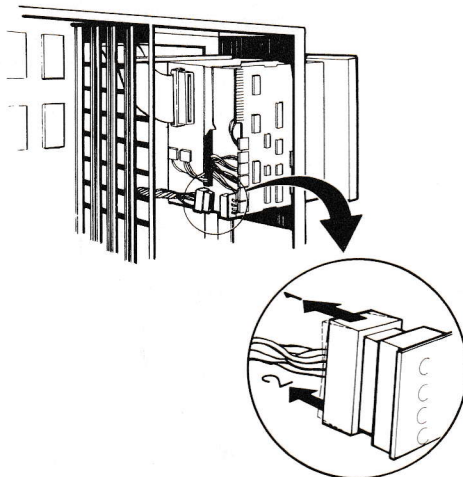


Figure 9-21. Removing the Power Cable

STEP 4: Pull Drive B completely out of the chassis.

STEP 5: Remove the screws holding the disk drive mounting plate to Drive B. You will later attach this plate to the Winchester drive.

NOTE:

Do not rest Drive B on your desk with its controller card facing down. You can inadvertently damage the controller by doing this.

9.3.4 Removing the Ribbon Cable from the System Card

STEP 1: Open the clips of the forwardmost connector on the System card. Remove the ribbon cable from the connector. (Refer to Figure 9-22.)

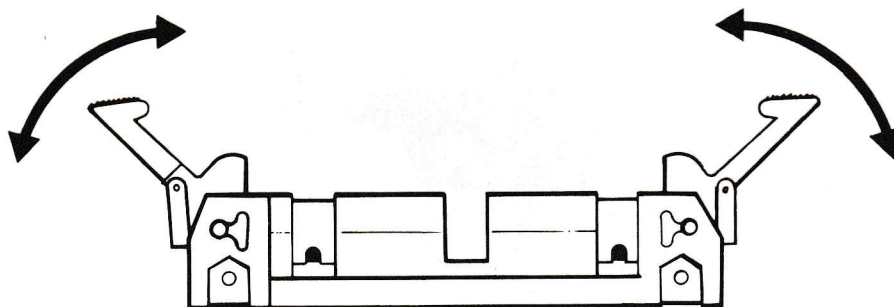


Figure 9-22. Removing the Cable from the Card

STEP 2: Place one hand on each end of the disconnected ribbon cable. Guide the cable back through the slot at the back of Drive A. Disengage the cable from the clips that secure it to the back of the drive compartment. Then pull the cable through the slot until it drops into the empty drive compartment. You will later attach this cable to the Winchester drive and the Winchester Controller card.

9.3.5 Installing the Winchester Disk Drive

STEP 1: Unpack the Winchester disk drive. Attach the mounting plate you removed in Section 9.3.2 or 9.3.3 tightly to the Winchester drive, using the screws provided on the inside of the drive compartment cover.

STEP 2: Slide the drive about halfway into the chassis, as shown in Figure 9-23.

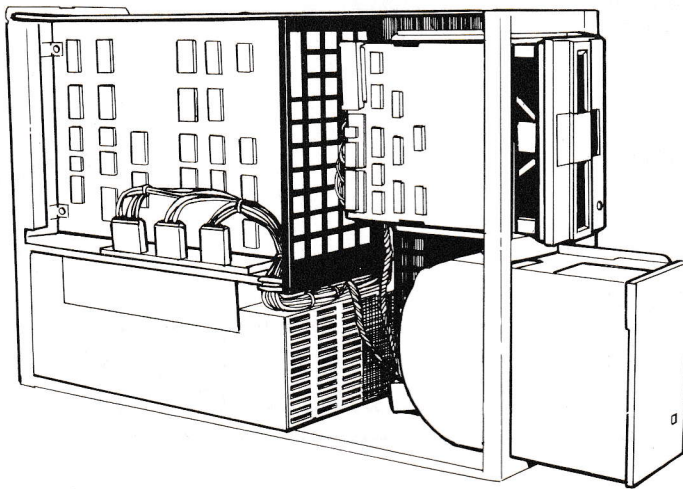


Figure 9-23. Inserting the Winchester Drive

STEP 3: Plug the 4-pinned power plug to the 4-pinned connector on the drive, as shown in Figure 9-24.

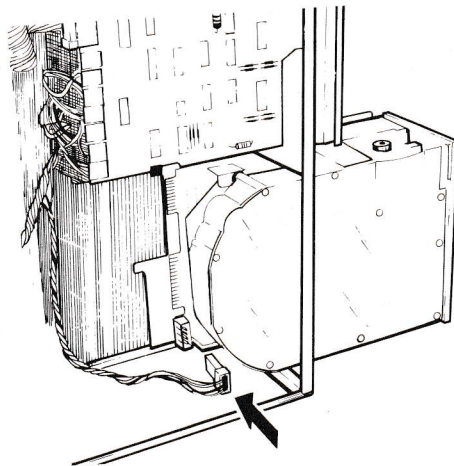


Figure 9-24. Connecting the Power Cable

STEP 4: Connect the ribbon cable you removed from the System card to the larger connector on the back of the drive, as shown in Figure 9-25. You cannot mount the connector incorrectly on the drive.

STEP 5: Connect the ribbon cable provided with the Winchester drive to the smaller set of connector pins on the drive. (Refer to Figure 9-25.)

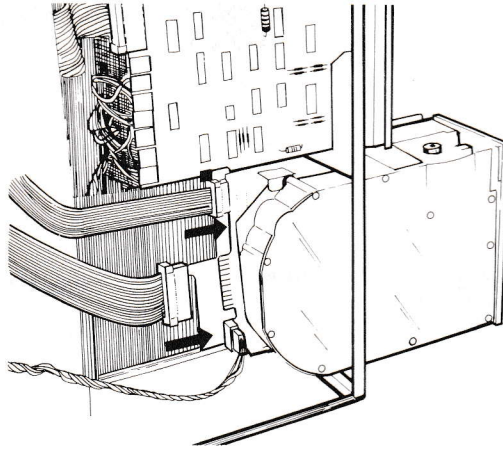


Figure 9-25. Connecting the Cables to the Drive

STEP 6: Feed the cables through the slot in the chassis behind the Winchester Controller card. Secure the cables in the clips on the back of the drive compartment. (Refer to Figure 9-26.)

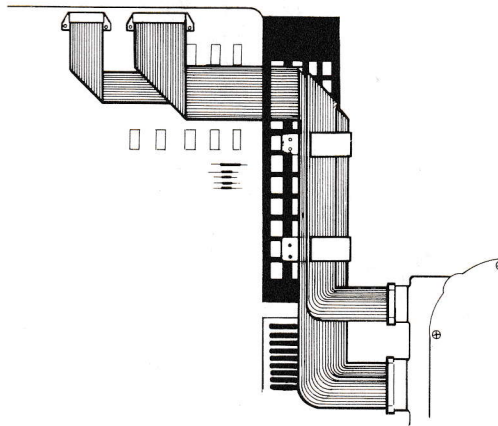


Figure 9-26. Threading the Winchester Cables

STEP 7: Connect the System card ribbon cable to the larger connector at the top of the Winchester Controller card, as shown in Figure 9-27.

STEP 8: Connect the Winchester ribbon cable to the smaller connector on the Winchester Controller card, as shown in Figure 9-27.

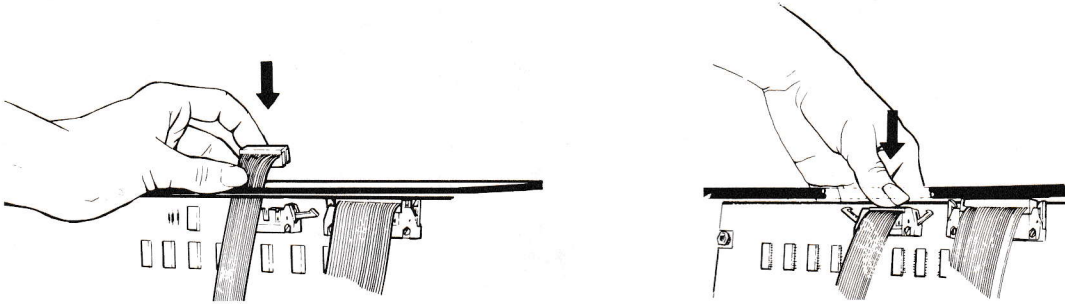


Figure 9-27. Winchester Controller Cable Connections

STEP 9: Slide the drive completely into the chassis. Fasten the drive to the chassis by replacing the screw in the mounting plate, as shown in Figure 9-28.

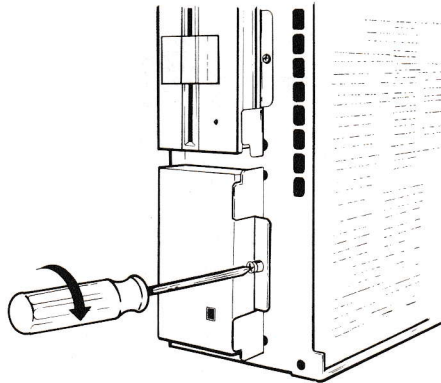


Figure 9-28. Securing the Winchester Drive to the Chassis

STEP 10: Make sure all cables are inside the chassis so that you can replace the cover of the electronics unit without damaging them.

9.3.6 Final Installation Steps

Replace the cover of the electronics unit. (Refer to the procedures and illustrations in Section 9.2.7.) Then reconnect your system as shown in Section 9.2.8.

The power-on diagnostics test both the Winchester Controller card and the Winchester drive each time you start your system. If the Winchester disk drive is operating correctly, your system follows the normal start-up sequence. However, if the power-on diagnostics detect a problem with the Winchester disk drive, the system displays the message, *22 WINCHESTER IN SLOT ## DEFECTIVE. The same message is displayed if the power-on diagnostics encounter a problem with the Winchester Controller card. If your system reports that Drive C is defective, you should reread Section 9.3, reinstall the Winchester disk drive, and retest your system to see if the problem was caused by an installation error. If Drive C remains defective after the retest, call the Wang Professional Computer Assistance Center at 1-800-343-1098.

9.4 INSTALLING A SECOND DISKETTE DRIVE

Installing a second diskette drive, or Drive B, consists of the following procedures:

1. Removing the cover of the electronics unit
2. Removing the disk drive mounting plate
3. Attaching the disk drive mounting plate to the drive
4. Installing Drive B
5. Replacing the cover of the electronics unit
6. Reconnecting your system
7. Testing Drive B

The first two procedures in the list -- removing the cover of the electronics unit and removing the disk drive mounting plate -- are covered in Sections 9.2.1 and 9.3.2, respectively. The remaining procedures in this list are described in the following sections.

9.4.1 Attaching the Disk Drive Mounting Plate

STEP 1: Remove the screws from the inside of the blank drive compartment cover.

STEP 2: Using these screws, attach the disk drive mounting plate firmly to the diskette drive. (Refer to Figure 9-29.)

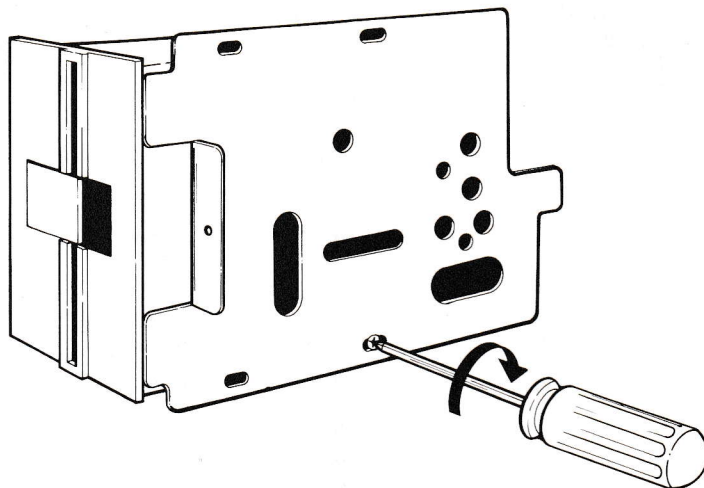


Figure 9-29. Installing the Drive Plate

9.4.2 Installing Drive B

STEP 1: Position the drive as shown in Figure 9-30.

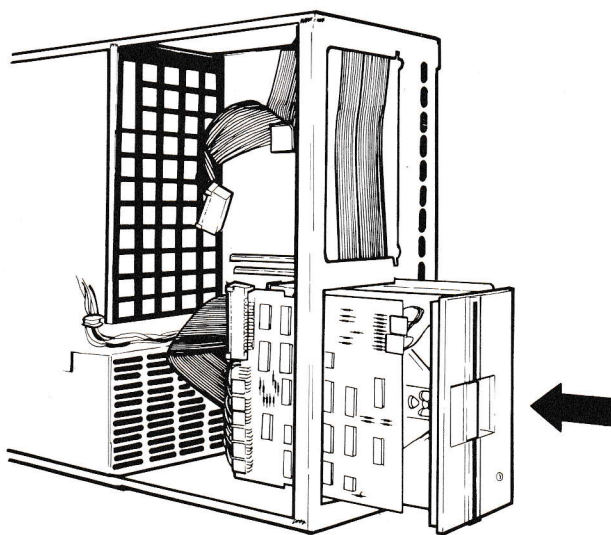


Figure 9-30. Inserting Drive B

STEP 2: Slide the drive halfway into the chassis, as shown in Figure 9-30. Be sure that the drive is sliding in the guides.

STEP 3: Remove the tie wrap from the 4-pinned power plug that extends from the power supply and connect it to the connector on the back of the diskette drive. (Refer to Figure 9-31.)

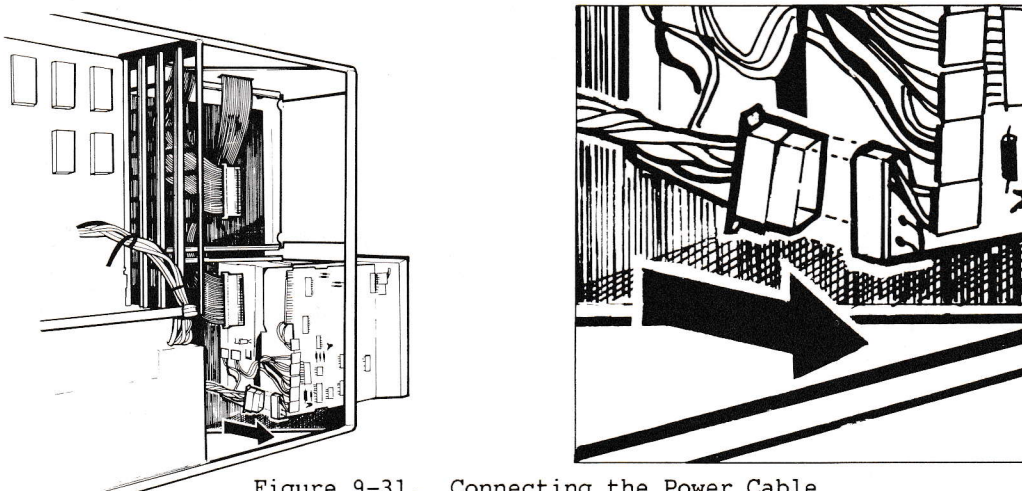


Figure 9-31. Connecting the Power Cable

STEP 4: Press the ribbon cable connector onto the keyed connector on the back of the diskette drive. Position the ribbon cable so it runs out of the connector as shown in Figure 9-32. The red stripe on the ribbon cable should face up.

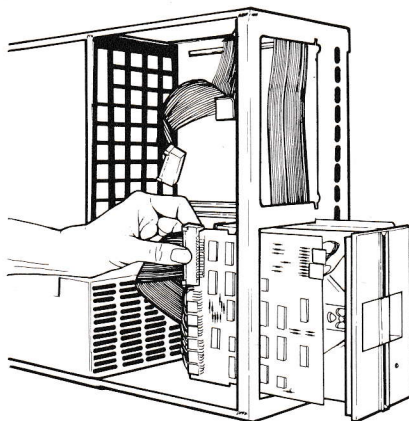


Figure 9-32. Positioning the Ribbon Cable

STEP 6: Slide the drive the rest of the way into the chassis. Secure the drive to the chassis by tightening the screw shown in Figure 9-33. If the drive won't slide all the way into the chassis, check to see if the tab at the back of the drive is aligned with the slot at the back of the compartment, as shown in Figure 9-33.

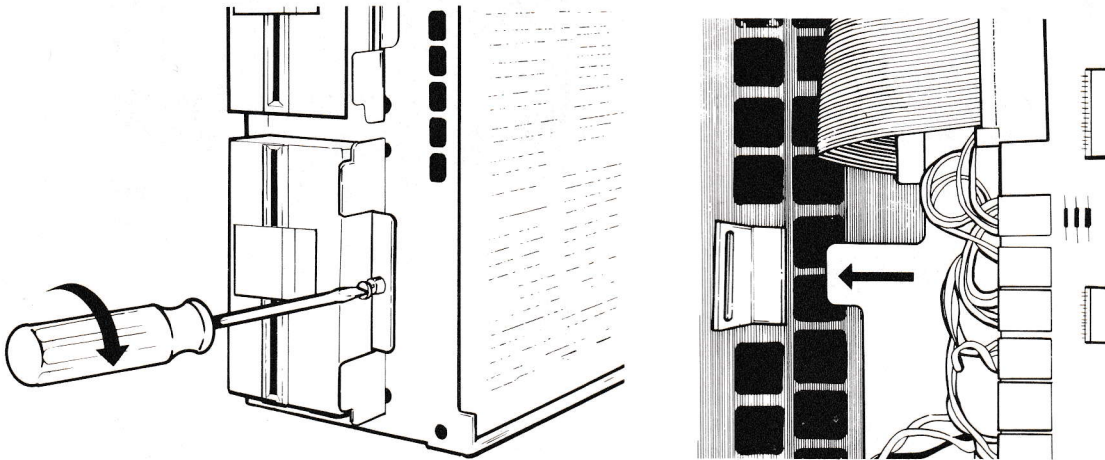


Figure 9-33. Installing Drive B

9.4.3 Final Installation Steps

Replace the cover of the electronics unit. (Refer to the procedures and illustrations in Section 9.2.7.) Then reconnect your system as shown in Section 9.2.8. After you reconnect your system, turn on the power switch. The power-on diagnostics will now run a test on Drive B each time you start your system. If Drive B is operating correctly, your system follows the normal start-up sequence. However, if the power-on diagnostics detect a problem with Drive B, the system displays the message: *22 DRIVE B DEFECTIVE. If this happens, you should reread Section 9.4, reinstall Drive B, and retest your system to see if the problem was caused by an error in installation. If Drive B remains nonfunctional after the retest, call the Wang Professional Computer Assistance Center at 1-800-343-1098.

Electronics Unit Options

9.5 INSTALLING THE ELECTRONICS UNIT ON THE DESK CLAMP

If you have purchased the optional desk clamp, you can use it to mount the electronics unit on the side of your desk. Before you install the desk clamp, you should use the following guidelines to determine whether or not you can safely install the clamp on your desk. Figure 9-34 and Table 9-1 outline the requirements that will ensure a safe installation and eliminate the possibility of unbalancing the desk.

CAUTION:

Do not use the desk clamp if any of your desk's measurements fail to meet the safety specifications shown in Figure 9-34. Do not use the desk clamp if your desktop either sits on a single pedestal base or rests upon, but is not secured to, its supports. Failure to observe these warnings will result in a potentially dangerous installation.

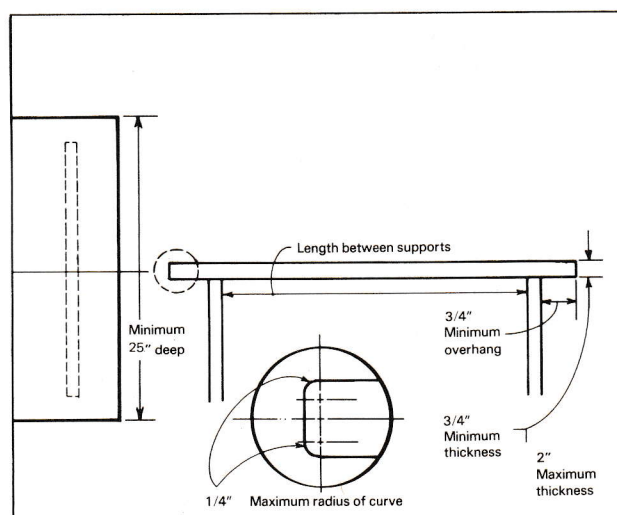


Figure 9-34. Desk Clamp Safety Specifications

As shown in Figure 9-34, your desktop must be between three-quarters of an inch and two inches thick in order for the desk clamp to work effectively. Second, there must be at least a 3/4-inch clearance between the edge of the desktop and the outer edge of any desk support or drawer underneath the desk in the immediate area of the desk clamp. Third, your desk must be at least 25 inches deep to enable you to position the electronics unit on the clamp while providing adequate ventilation.

In addition to the preceding specifications, your desk must conform to certain other minimum requirements in order to ensure its stability once the electronics unit is installed on the desk clamp. To determine this, you must measure the following:

- the length between the desk's supports (in inches)
- the overhang length (in inches)
- the approximate weight of the desk (in pounds)

Use Table 9-1 to interpret these measurements. The following procedure will help you to do this.

STEP 1: Find the Length Between Supports measurement on the chart that comes closest to yours.

STEP 2: Locate the approximate weight of your desk in the Weight column.

STEP 3: Read across the chart, and find the overhang that corresponds to the approximate weight of your desk.

STEP 4: Compare your measured overhang with the figure in the Maximum Overhang column. If the measured overhang is less than or equal to the overhang in the desk, your desk can support the electronics unit attached to the desk clamp.

Table 9-1. Desk Stability Relationships Chart

Length Between Supports (in.)	Weight (lb.)	Maximum Overhang (in.)	Length Between Supports (in.)	Weight (lb.)	Maximum Overhang (in.)
40"	56	.75	60"	37	.75
	75	2.2		50	2.2
	100	4.1		75	5.1
	125	6.1		100	8.0
	150	8.0		125	10.9
	175	9.9		150	13.8
	200	11.8		175	16.6
45"	50	.8	65"	200	19.5
	75	2.9		34	.75
	100	5.1		50	2.7
	125	7.3		75	5.8
	150	9.4		100	9.0
	175	11.6		125	12.1
	200	13.8		150	15.2
50"	45	.8	70"	175	18.3
	50	1.3		200	21.5
	75	3.7		250	27.7
	100	6.1		32	.8
	125	8.5		50	3.2
	150	10.9		75	6.5
	175	13.3		100	9.9
55"	200	15.7	75"	125	13.3
	41	.8		150	16.6
	50	1.7		175	20.0
	75	4.4		200	23.4
	100	7.0		250	30.1
	125	9.7		30	.8
	150	12.3		50	3.7
	175	15.0		75	7.3
	200	17.6		100	10.9
				125	14.5
				150	18.1
				175	21.7
				200	25.3
				250	32.5

For example, if your desk is 60 inches long between supports, has a 6-inch overhang, and weighs 100 pounds, you would use the following process to determine if your desk will support a Wang Professional Computer attached to the desk clamp.

STEP 1: Locate the 60-inch length in the Length Between Supports column of Table 9-1.

STEP 2: Locate the 100-pound entry in the Weight column.

STEP 3: Read across to the overhang figure -- in this case, 8 inches.

STEP 4: Compare your overhang measurement (6 inches) with the 8-inch figure in the chart. Since the measured figure is less than the figure in Table 9-1, your desk will support the electronics unit attached to the desk clamp.

If your desk meets the desk clamp safety requirements, you can use the following steps to attach the desk clamp to your desk.

CAUTION:

Turn the ON/OFF switch to the OFF position and unplug the power cord from the wall outlet before you begin to attach the electronics unit to the desk clamp.

STEP 1: Open the jaws of the clamp. Position the clamp where you want to install it on the desk. You should install the desk clamp/electronics unit assembly where you can comfortably open and close each of the diskette drive doors from your normal working position.

NOTE:

Position the clamp as far forward on your desk as possible to enable the interior fan to cool the electronics unit. Inadequate ventilation can lead to system failure.

STEP 2: Push the clamp up against the edge of your desk. Tighten the bolts by turning them counterclockwise. After you have tightened the jaws flush with the bottom of your desk, turn each bar at least two more revolutions or until it is completely secure.

STEP 3: Carefully pick up the electronics unit and position it so that the front is facing forward, as shown in Figure 9-35.

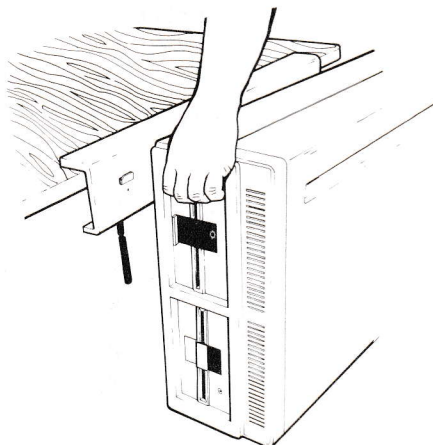


Figure 9-35. Positioning the Electronics Unit

STEP 4: Make sure that all of the cables are slack and untangled. Locate the cutouts on the side of your electronics unit. Refer to Figure 9-36.

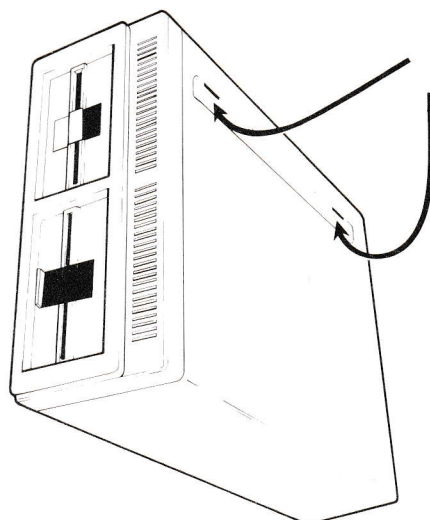


Figure 9-36. The Electronics Unit Cutouts

Electronics Unit Options

STEP 5: Attach the electronics unit to the desk clamp by fitting the cutouts on the electronics unit over the prongs on the clamp. Do not let go of the electronics unit until the top of the electronics unit is even with the top of the desk clamp. (Refer to Figure 9-37.)

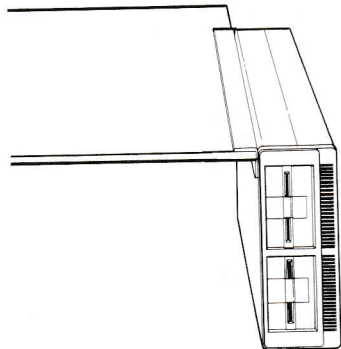


Figure 9-37. The Electronics Unit on the Desk Clamp

STEP 6: Reconnect the power cord to the wall outlet. Reposition your keyboard and monitor if necessary. Your computer system is now ready to use.

Electronics Unit Options

10

MONITOR OPTIONS

Connecting a Monitor
Assembling the Monitor Arm
Attaching the Assembled Monitor Arm

CHAPTER 10 MONITOR OPTIONS

This chapter explains the procedure for connecting a monitor other than the Wang Monochrome Monitor to the industry-standard Monitor/Graphics card. (Directions for connecting the Wang Monochrome Monitor are included in Section 2.7.) If you are using the Wang Monochrome Monitor, you may also have purchased the optional monitor arm. This chapter also describes how to assemble the monitor arm, and tells you how to attach it to your desk.

10.1 CONNECTING A MONITOR

If you are using a monitor other than the Wang Monochrome Monitor with your Wang PC, you must first connect that monitor to the industry-standard Monitor/Graphics card. (Refer to Section 9.2.) Use the following set of instructions to connect your monitor to your system.

STEP 1: Connect your monitor's cable to the monitor cable connector on the back panel of the electronics unit, as shown in Figure 10-1.

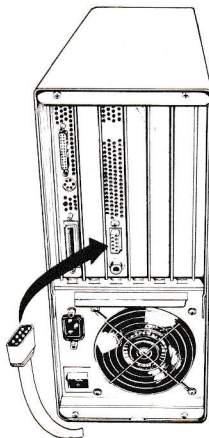


Figure 10-1. Connecting an Industry-standard Monitor

STEP 2: Plug the monitor's power cord into an appropriately rated power outlet. Make sure the monitor is turned off.

STEP 3: Connect the electronics unit power cord to the back panel, as shown in Figure 10-2. Set the red power switch in the OFF position. Plug the free end of this cord into an appropriately rated power outlet.

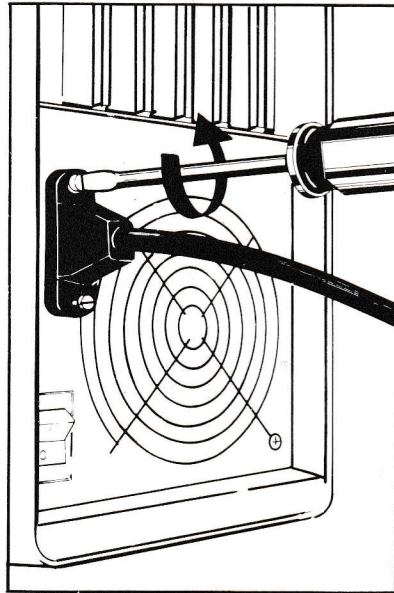


Figure 10-2. Connecting the Power Cord

STEP 4: Turn on your monitor.

CAUTION:

Make sure that you have removed the shipping protector(s) from your diskette drive(s) before you turn on your system. (Refer to Section 2.3 for instructions on how to remove the shipping protector.)

STEP 5: Turn on the power switch at the back of your electronics unit.

At this point, your computer system is on. Each time you turn on the system, the computer runs its power-on diagnostic tests. While the tests are running, the five indicator lights on the keyboard light up. All of the indicator lights should go off after about 30 seconds, after which the Start-up screen should appear. (Refer to Figure 3-3.)

NOTE:

The Start-up screen should also include the messages ***41 START FAILED and 72 DRIVE A NOT READY. These messages do not indicate that your system is malfunctioning; they merely point out that you did not insert a diskette in Drive A. The computer can't do anything else until you load System Diskette I in Drive A and restart the system.

Monitor Options

If any of the diagnostic indicator lights remains on for longer than 25 seconds, or if the system displays diagnostic messages other than ***41 START FAILED and 72 DRIVE A NOT READY on the screen, you probably have a problem with one of your components. If this is the case, you should turn to Appendix B, System Diagnostics, for instructions on what to do next.

If the Start-up screen does not appear after about 30 seconds, you should adjust the brightness and contrast knobs. If nothing appears on the screen after you do this, your monitor connections are probably loose. Check these connections and make any necessary adjustments.

After the Start-up screen appears, turn off your system. Before you do any work on your system, you should read Chapter 4. This chapter discusses some general concepts you should understand before you begin to work with diskettes. You should also read Section 3.1, which explains how to load System Diskette I and start the system.

Before you begin to use your system, set it up on your desk, following the guidelines specified in Section 2.9.

10.2 ASSEMBLING THE MONITOR ARM

If you have purchased the optional monitor arm, you can attach the Wang Monochrome Monitor to it. Note, however, that this arm is intended for use with the Wang Monochrome Monitor only. Follow the steps below to assemble the monitor arm.

STEP 1: Make sure that your desk meets the critical safety specifications shown in Figure 10-3.

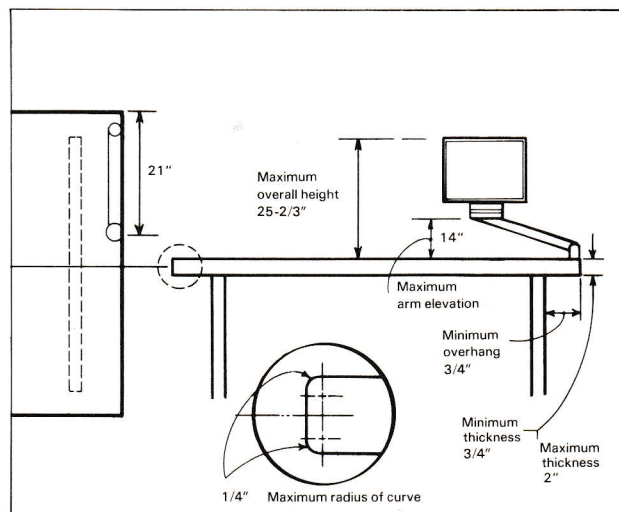


Figure 10-3. Monitor Arm Safety Specifications

In summary, the safety specifications in Figure 10-3 say the following. First, your desktop must be at least $\frac{3}{4}$ of an inch thick, but no more than 2 inches thick in order for the clamp to work effectively. Second, there must be at least a $\frac{3}{4}$ -inch clearance between the edge of the desktop and the outer edge of any desk support or drawer underneath the desk in the immediate area of the monitor arm. Third, there must be at least a 21-inch radius between the point at which you intend to attach the clamp and any walls or objects that may interfere with the movement of the monitor arm. Fourth, you should check to be sure that there are no objects (such as bookshelves or lamps) placed less than 26 inches above the desk, since they will also inhibit the movement of the monitor arm. Finally, if your desktop has rounded edges, you can't use the monitor arm unless the radius of arc on each edge is less than $\frac{1}{4}$ inch.

WARNING:

If any of your desk's measurements fails to meet the safety specifications shown in Figure 10-3, do not attach the monitor arm to your desk. Also, if your desktop either sits on a single pedestal base or rests upon, but is not directly attached to, its supports, you should not use the monitor arm. Failure to observe this warning may result in a potentially dangerous installation in which the monitor may fall off your desk and be damaged.

STEP 2: Make sure that your computer is turned off.

STEP 3: Disconnect the monitor cable from the back panel of the electronics unit by pulling out the top connector. Then pull out the bottom connector. It is not necessary to disconnect the monitor cable from the monitor during this procedure.

STEP 4: Turn the Wang monitor upside-down so that the pedestal base is facing upward, as shown in Figure 10-4.

Monitor Options

STEP 5: Using a flat-blade screwdriver, a dime, or other flat object, pry out the arm's protective cover, as shown in Figure 10-4.

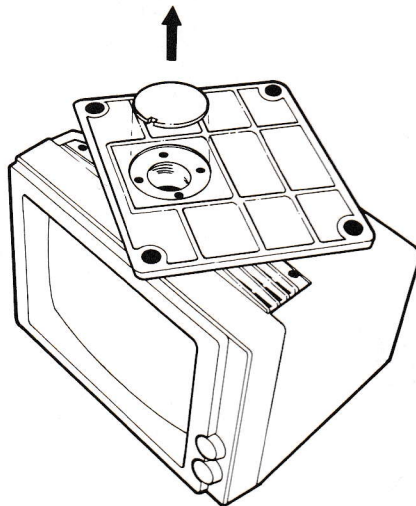


Figure 10-4. Preparing to Attach the Monitor Arm

STEP 6: Locate the four screws that hold the base to the monitor, as shown in Figure 10-5a. Use a #1 point-size Phillips screwdriver to unscrew each of these screws. Be sure to save these screws, since they also fasten the arm to the monitor.

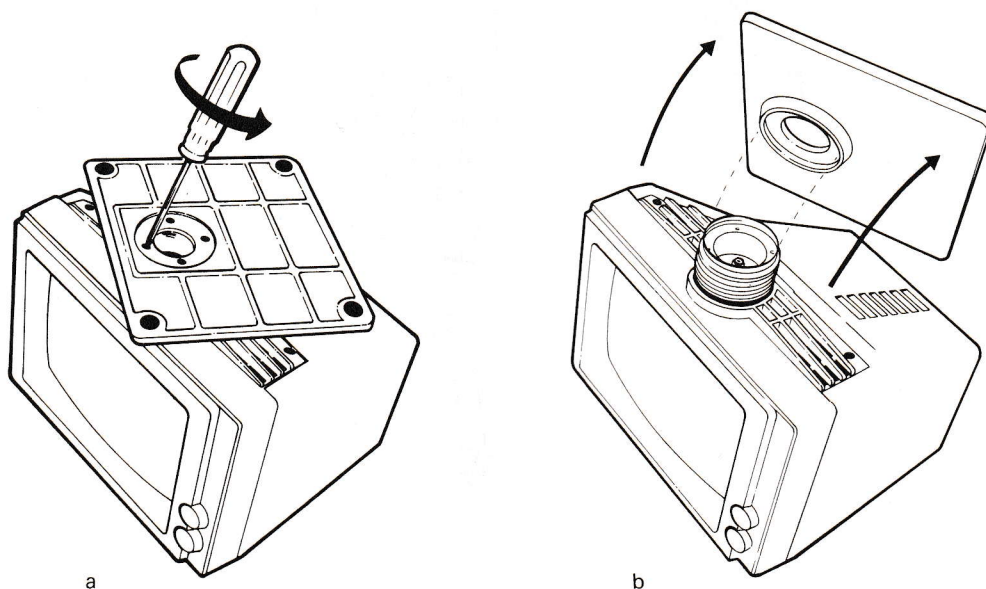


Figure 10-5. Removing the Pedestal Base

STEP 7: Gently lift the pedestal base off the monitor, as shown in Figure 10-5b.

STEP 8: Pinch the rubber bellows so you can remove it from the monitor as shown in Figure 10-6. You will be putting the rubber bellows back in place after you remove the movement restrictor band in Step 10.

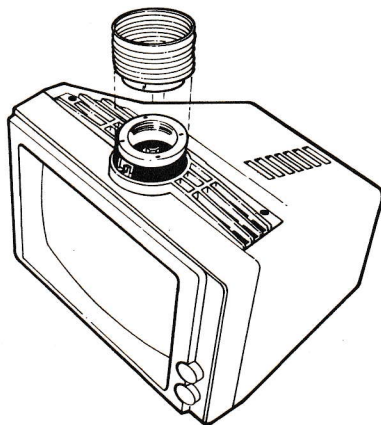


Figure 10-6. Removing the Bellows

STEP 9: Find the movement restrictor band and unsnap it, as shown in Figure 10-7. This band restricts the right and left rotation of the monitor when it is on its pedestal base. The movement restrictor band is not used in the monitor arm assembly. As a result, you can freely turn the monitor to the left or right when it's on the monitor arm.

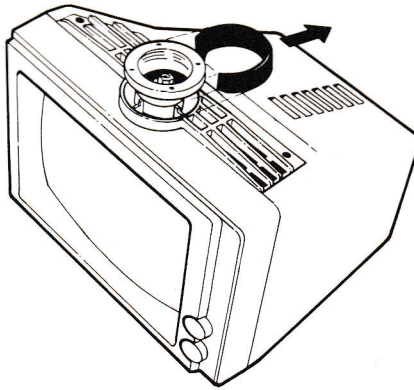


Figure 10-7. Removing the Movement Restrictor

NOTE:

Keep the movement restrictor band in case you decide to put the monitor back on its pedestal base.

STEP 10: Replace the rubber bellows, as shown in Figure 10-8.

STEP 11: Place the monitor arm on the monitor as shown in Figure 10-8. The gray plastic cable guide cover should be facing you.

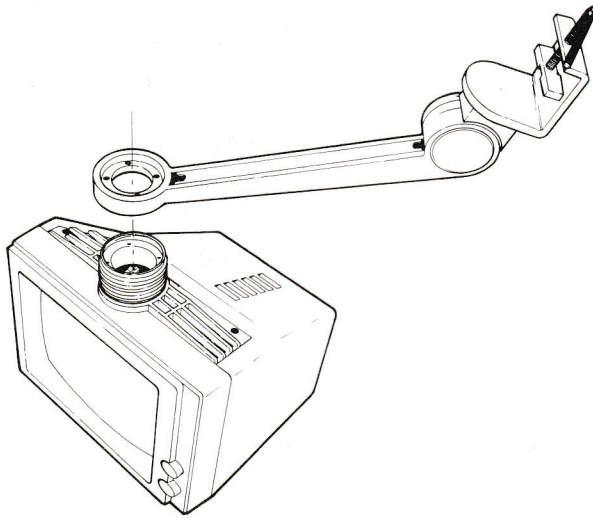


Figure 10-8. Positioning the Monitor Arm

STEP 12: Line up the screw holes in the arm with those on the monitor. You will probably need someone to support the arm as you begin to attach it to the monitor. Refer to Figure 10-9.

STEP 13: Use the four screws you removed from the base to secure the arm to the monitor. Do not let go of the monitor arm until after you screw down the third screw.

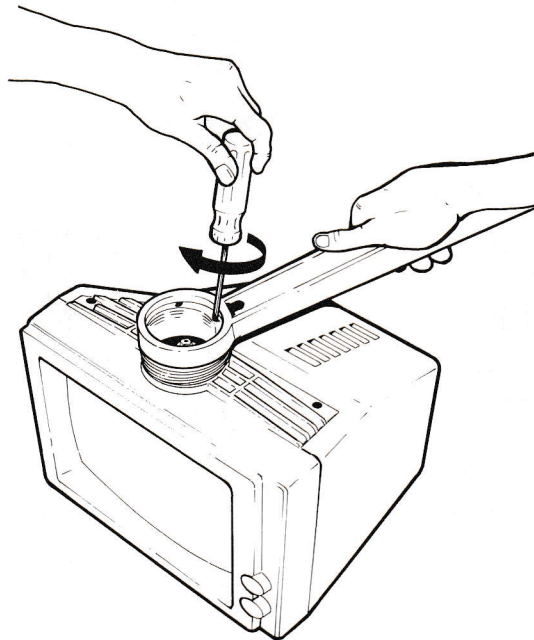


Figure 10-9. Attaching the Arm

STEP 14: Snap the round protective cover onto the bellows, as shown in Figure 10-10.

STEP 15: Remove the cable guide from the arm. Pry out the cable guide with your screwdriver as shown in Figure 10-10a.

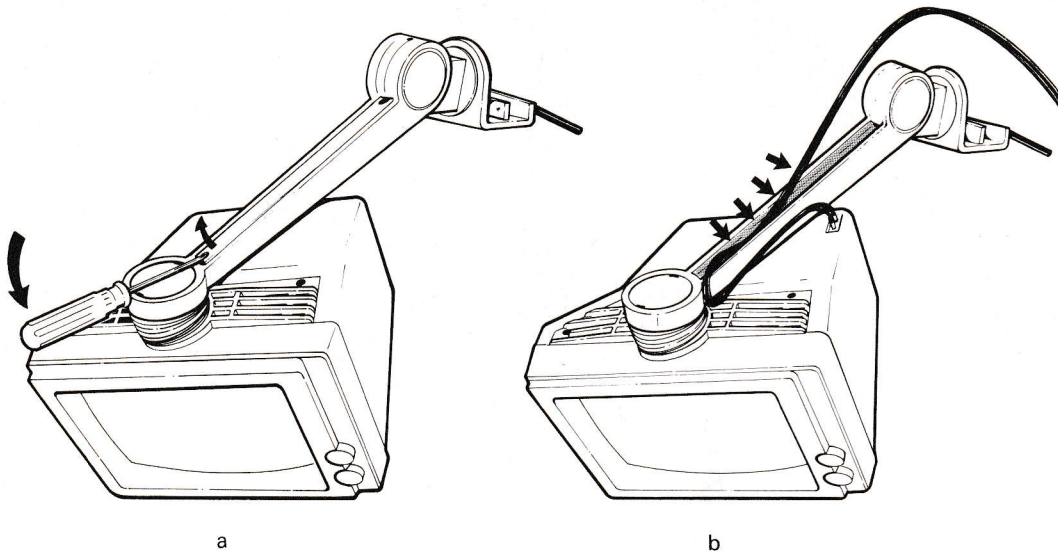


Figure 10-10. Threading the Monitor Cable

STEP 16: Thread the monitor cable over the far end of the arm and into the cable channel, as shown in Figure 10-10. Leave some slack in the cable between the monitor's cable connectors and the bellows end of the cable channel. Place the monitor cable in the arm as shown in Figure 10-11 and snap the cable guide back in place. Once you complete this process, you have finished assembling the monitor arm.

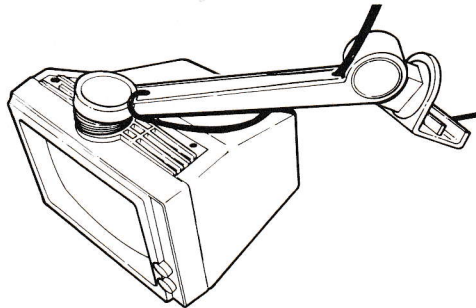


Figure 10-11. The Assembled Monitor Arm

10.3 ATTACHING THE ASSEMBLED MONITOR ARM

After you attach the monitor arm to your desk, you can adjust the height of the monitor, tilt the monitor up or down, or swing the monitor to the left or right. Although the monitor arm is preset to swing left or right through an arc of 180 degrees, you can either restrict the arm's movement to a 90-degree arc or increase it to a full 360 degrees. If you want to change this setting, you should do so before you clamp the monitor arm onto your desk. Figure 10-12a shows where the arc restrictors are located inside the monitor arm. Figure 10-12b illustrates how you change the arc setting.

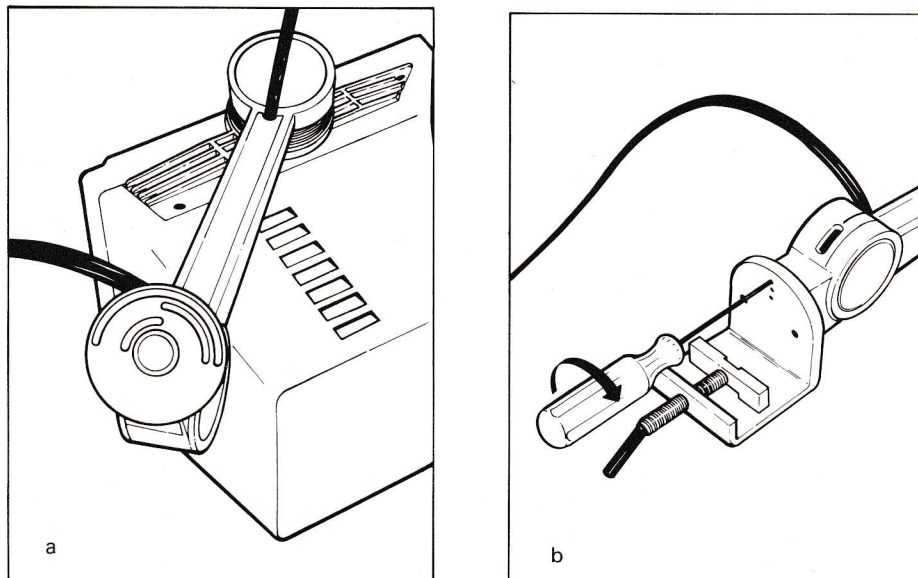


Figure 10-12. The Arc Restrictors

Figure 10-13 shows the range of motion that each of the arc settings creates for the most common configurations of the monitor arm on a desk. The black dot to the left of the setting indicates the position of the set screw.

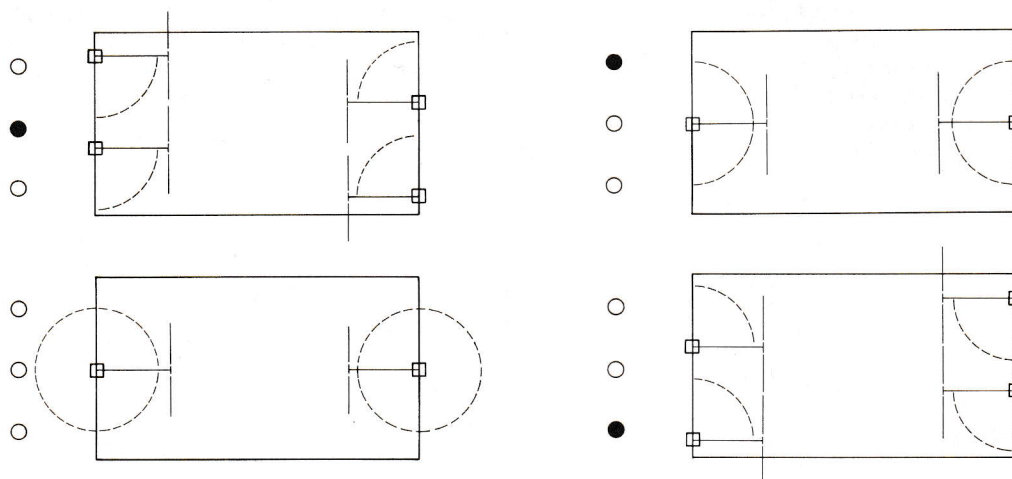


Figure 10-13. Monitor Arm Arc Settings

If you want your monitor to move in a 180-degree arc, leave the set screw in the outermost arc (the hole the screwdriver is in in Figure 10-12b). If you want the monitor to swing only 90 degrees, move the set screw to either the center or innermost arc setting. Use Figure 10-13 to determine which setting is most suitable to your needs.

Once you have selected the setting you want, insert the 3/32-inch Allen wrench supplied with the monitor arm into the 180-degree arc restrictor hole. Remove the set screw by placing the Allen wrench in the outermost arc and turning it counterclockwise until the set screw is completely out of the arm. Place the set screw in the arc setting you've selected and turn the wrench clockwise until the screw is completely tightened in the new setting. To allow the monitor to swing in a 360-degree arc, you need only remove the set screw.

You are now ready to install the monitor arm on your desk. The following procedure tells you how to do this.

Monitor Options

STEP 1: To avoid the possibility of someone tripping over the monitor cable, tape the cable to the arm, as shown in Figure 10-14a.

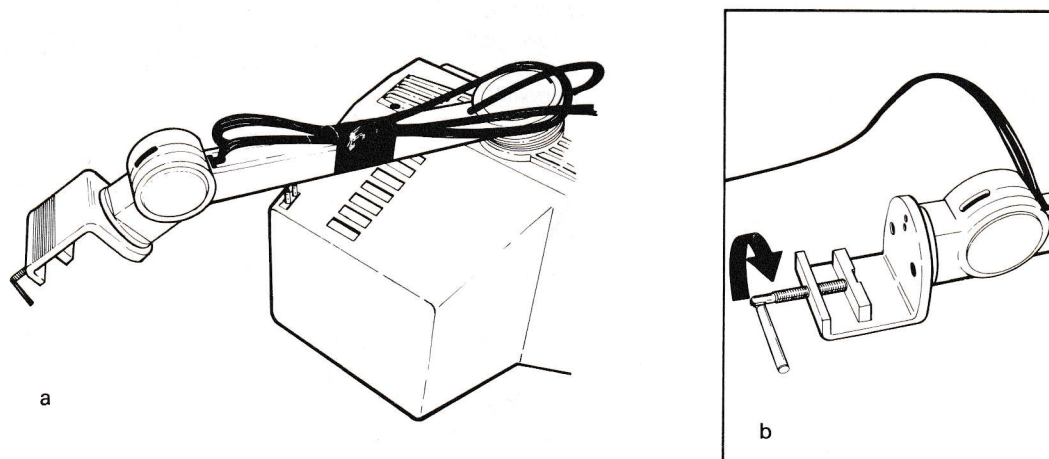


Figure 10-14. Taping the Monitor Cable

STEP 2: Before you pick up the assembled arm, make sure that the clamp is opened wide enough to fit over the edge of your desk. (Refer to Figure 10-14b.) Turn the bar clockwise to open the clamp.

STEP 3: Have someone pick up the monitor arm assembly, supporting it from underneath as shown in Figure 10-15.

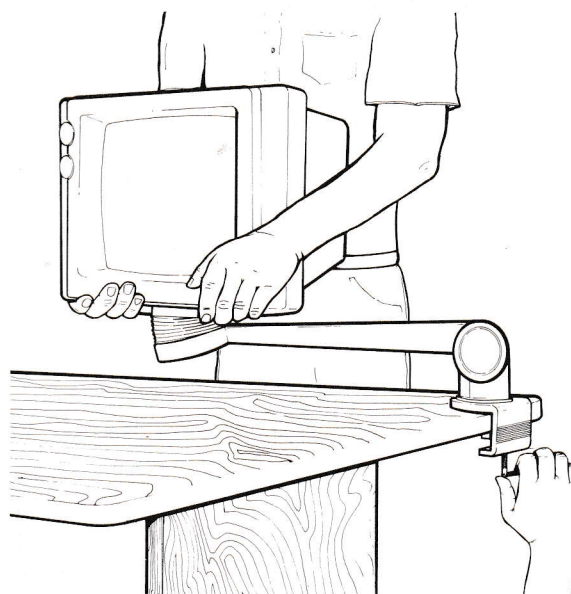


Figure 10-15. Installing the Monitor Arm

STEP 4: Position the clamp in the desired location on your desk.

STEP 5: Tighten the clamp by turning it counterclockwise, as shown in Figure 10-16. Make sure that the back edge of the clamp is flush against the edge of your desk. When the bottom jaw of the clamp is tight against the bottom of your desk, continue to turn the tightening bar for at least two more revolutions, or until it is completely secure.

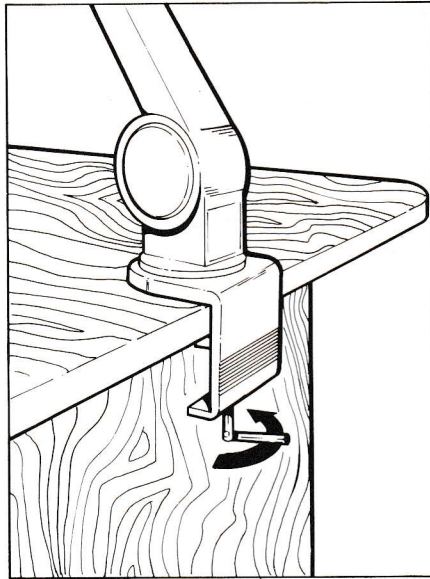


Figure 10-16. Tightening the Monitor Arm Clamp

Monitor Options

STEP 6: Reconnect the two connectors on the monitor cable to the electronics unit. (Refer to Figure 10-17.)

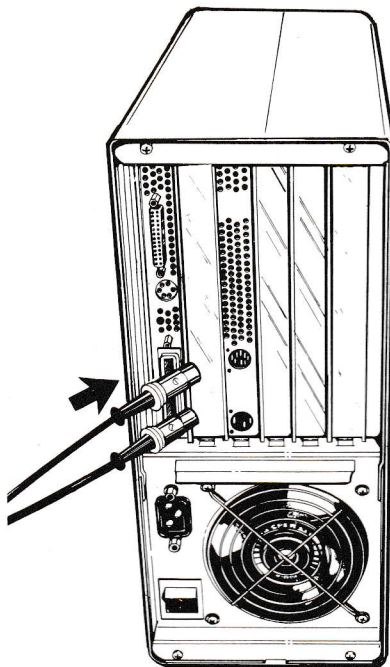


Figure 10-17. Reconnecting the Monitor

STEP 7: Check to be sure that the power switch is in the OFF position.

STEP 8: Plug the power cord into a wall outlet. Your monitor arm is now installed.

Appendix F describes the procedure for removing the arm and reassembling the base.

APPENDICES

APPENDIX A COMMON PROBLEMS

A.1 INTRODUCTION

Problems are not always what they seem. Many of the problems that arise when you first begin to use a computer may appear to be serious but are actually easy to diagnose and correct. This appendix describes situations that may develop as you learn to use your Wang Professional Computer. Each one is described and then explained. A solution is presented for each problem and, if appropriate, references are given to sections within this manual where a particular procedure is discussed in more detail.

Each of the problems described in this chapter is the result of user error or misunderstanding. If you encounter a problem, look through this list. You should be able to match your problem to one of those described in this appendix and correct your mistake. If the problem you've encountered isn't described in this appendix, turn to Appendix B, System Diagnostics, to see what you should do next. Appendix B lists the procedures you should follow to contact the Wang Professional Computer Assistance Center about a problem. Appendix B also describes how you can use the System Diagnostics diskette to detect hardware problems in your system.

A.2 STARTING THE SYSTEM

The Problem	Possible Causes and Solutions
You turn on the Wang PC, the power-on diagnostics run, and the Start-up screen appears. The following message appears on the Start-up Screen:	
<p>***41 START FAILED 72 DRIVE A NOT READY</p>	<p>The diskette drive door is closed but there is no diskette in the drive. Insert System Diskette I in Drive A and restart the system as described in Section 3.1.</p> <p>You inserted the diskette incorrectly. Remove the diskette, make sure that the arrows are pointing in the right direction, and reinsert the diskette. Restart your system.</p>
<p>***41 START FAILED 73 DRIVE A FAILURE</p>	<p>There is an unformatted and uninitialized diskette in the drive. Take out the diskette and format it. Refer to Section 3.4 for details on how to format a diskette.</p>
<p>***40 NO AUTO-START DEVICE</p>	<p>Both diskette drive doors are open. Insert System Diskette I in Drive A, close the door, and restart the system.</p>
<p>***41 START FAILED 71 DRIVE A NO WANG START TRACK</p>	<p>Check to make sure that System Diskette I is in Drive A. Remove System Diskette I and reinsert it, making sure that the arrows are oriented correctly.</p>
<p>You start your system with System Diskette I in Drive A. The drive indicator light comes on, the drive makes a whirring sound, but nothing appears on the screen.</p>	<p>The Wang Monochrome Monitor is not connected or is connected improperly. See Section 2.7 for details on how to connect the Wang Monochrome Monitor.</p>

Common Problems

A.3 USING DISK DRIVES AND DISKETTES

The Problem	Possible Causes and Solutions
After starting your system and inserting a diskette, you get the following message: ***45 DISK READ ERROR - RESTART	The diskette is inserted incorrectly. Reinsert the diskette, making sure that the arrows are oriented correctly.
You want Drive B to be the default drive.	Select the DOS Command Processor from the Main System Menu. At the DOS prompt "A:" type the drive designation "B:". Drive B is now the default drive. Drive B is the default drive if you start or restart your system by loading System Diskette I in Drive B and leave Drive A's door open.
You insert a diskette correctly but it doesn't load successfully.	The diskette may be either unformatted or damaged. Insert a formatted diskette. Refer to Section 3.4 for details.
You want to use a diskette for the first time.	Format the diskette. Refer to Section 3.4 for instructions on how to format a diskette.
You try to use a file on a diskette but you're unsuccessful.	The diskette is write-protected. Remove the write-protect tab from the diskette and try again.
You can't find a directory on a diskette.	Make sure that you are specifying the directory correctly. If you still can't find the directory, the diskette has not been formatted. Format the diskette as described in Section 3.4.

The Problem	Possible Causes and Solutions
You try to use a file but you get a "File not found" message.	The file you're looking for isn't on the diskette in the current drive. Check the directory to confirm this. If the file appears in the directory, retype the file name. You may have used the wrong syntax or an incorrect spelling the first time you entered the command.
You try to save a file on a diskette but you get a "Diskette full" message.	There isn't enough room left on the diskette in the current drive. Use a different diskette to store file.

A.4 USING THE MENUS

The Problem	Possible Causes and Solutions
You want to select a menu option.	<p>Press the space bar to move the acceptance block to the desired menu selection. Press EXEC.</p> <p>NOTE: On many Wang PC menus, you can move the acceptance block by typing the first letter of the name of the item you wish to select.</p>
You want to get out of the system menus and into the DOS Command Processor.	Select the DOS Command Processor menu option from the Main System Menu.
You want to move out of BASIC and back to the system menus.	Type the word SYSTEM, make sure that System Diskette I is in the default drive, and press RETURN.
You want to move from the Command Processor back to the system menus.	Type the word EXIT and then press RETURN.
You make a menu selection but nothing happens.	The diskette in the default drive does not include the software for your selection. Check the disk directory. Locate the diskette with the appropriate software and insert it in the default drive. Make your menu selection again.

Common Problems

A.5 RESTARTING YOUR SYSTEM

The Problem	Possible Causes and Solutions
You try the restart key sequence but nothing happens.	You may have typed the restart key sequence incorrectly. Press 2ND + COMMAND simultaneously, then release that key combination and press CANCEL. If this does not work, turn the power switch off, wait five seconds, and turn it on again.

A.6 USING THE KEYBOARD

The Problem	Possible Causes and Solutions
You're not sure when you can begin to type.	You can type whenever you see a prompt followed by a cursor (a blinking bar). In DOS, the prompt is a capital A followed by a colon (A:); the cursor appears next to the prompt. The BASIC prompt is the word Ok; the cursor appears underneath the prompt. In a utility display, the cursor appears next to the first prompt when the display appears.
Nothing happens when you press the keys.	The keyboard cable is unplugged or partially unplugged. Plug the end of the keyboard cable into the connector on the back of the electronics unit. Section 2.6 shows the procedure for connecting the keyboard cable.
You want the computer to accept what you've typed.	In the DOS Command Processor or in BASIC, press RETURN. In a utility display, press EXEC after you respond to all prompts in the display.
You want to make a key repeat.	Press the key. It will begin to repeat if you hold it down for more than one-third of a second.

The Problem	Possible Causes and Solutions
The Word Processing special function keys or Multiplan special function keys don't work.	The Word Processing special function keys only work when the Word Processing software is loaded into the system. When you select Word Processing or Multiplan from the Applications Menu, a diskette with the application should be loaded in the default drive.
You can't get CONTROL to work.	You're not using the key correctly. First, press CONTROL. Then press the combination code key while continuing to hold down CONTROL. This process is the same one you use to type uppercase letters on a typewriter.

A.7 USING YOUR MONITOR

The Problem	Possible Causes and Solutions
You can't get a picture.	<p>The contrast knob is turned down. Slowly turn this knob to adjust the contrast. If turning the contrast knob doesn't work, try turning the brightness knob.</p> <p>The monitor is not plugged in. Check your connections. Refer to Section 2.7 for details on connecting the Wang Monochrome Monitor.</p>
Characters are too light or too bright	The brightness and/or contrast knobs are set incorrectly. Slowly turn these knobs until the characters are easy to read on a solid background.
Your monitor doesn't show color.	<p>Either your video card or the monitor doesn't have color capability.</p> <p>The application you're using doesn't have any color displays.</p>
Your monitor doesn't show graphics.	Either your video card or the application you're using doesn't have graphics capability.

Common Problems

A.8 PRINTING

The Problem	Possible Causes and Solutions
Nothing prints.	<p>Your printer may not be selected. Select the printer. Check the printer reference manual for details.</p> <p>The printer cable is not securely connected.</p> <p>The printer's power switch isn't turned on.</p>
Pages not starting to print and/or not stopping in the right place.	Adjust top of form. Your printer reference manual explains how to adjust the top of form.
You can't figure out how to get your system to print.	<p>Consult your printer reference manual.</p> <p>Verify that a device driver is installed in the operating system. (Refer to Appendix I.)</p>
The paper rips every time you tear a page off the printer.	The paper is jammed or there is no line feed. Check your printer reference manual for details.
The print quality is poor.	Replace the ribbon or adjust the forms thickness. Refer to your printer reference manual for instructions.

A.9 FURTHER PROBLEMS

If you are having a problem with your system that you haven't been able to solve by using the procedures suggested in this chapter, turn to Appendix B, System Diagnostics, to decide what you should do next.

APPENDIX B SYSTEM DIAGNOSTICS

B.1 INTRODUCTION

This chapter explains the functions of the two types of diagnostic tests (power-on diagnostics and System Diagnostics) that run on the Wang Professional Computer. The chapter tells you what you should do if the power-on diagnostics report that your system contains a defective device. The chapter also contains a description of how you should use the System Diagnostics diskette.

Most problems that will arise as you begin to use your system are explained in Appendix A, Common Problems. If you need help on a specific procedure, consult the appropriate chapter in this manual. If you need immediate assistance in diagnosing a problem with your system, you can call the Wang Professional Computer Assistance Center at 1-800-343-1098. The Professional Computer Assistance Center is located in Lowell, Massachusetts, and supports a toll-free phone line from 8:30 am to 5:30 pm, Monday through Friday, Eastern time. By calling this number you can receive answers to questions about any Wang-provided application, utility, language, or operating system. You can use the toll-free number from anywhere within the United States, Puerto Rico, or the Virgin Islands, with the following exceptions. If you're located in Massachusetts, Alaska, or Hawaii, you should call 617-459-5000 and ask to be connected to the Wang Professional Computer Assistance Center.

B.2 THE POWER-ON DIAGNOSTICS

You may have a serious problem with your system if an alarm sounds while your system runs the power-on diagnostics and any single LED or combination of LEDs remains lit for more than 30 seconds. If this happens, restart your system and see if the problem recurs. If it does, you should call the Wang Professional Computer Assistance Center.

NOTE:

If you have an On-site Maintenance Contract covering your system, you should contact your customer engineer at the number provided on your copy of the service agreement contract.

The personnel at the Assistance Center will help you determine which component is causing the problem. Once the problem has been identified, you will be told to send the defective component to one of the three Wang Field Service Centers in Lawrence, MA, Atlanta, GA, or Marina Del Ray, CA.

If the power-on diagnostics run successfully but the Start-up screen reports that there are one or more defective devices in your system (as in the sample shown in Figure B-1), you should also call the Wang Professional Computer Assistance Center. The personnel at the Assistance Center may request that you use the System Diagnostics diskette to isolate the problem. Though in many cases you can continue to use a system with a defective device, at some point you will have to send the defective component to a service center to be repaired.

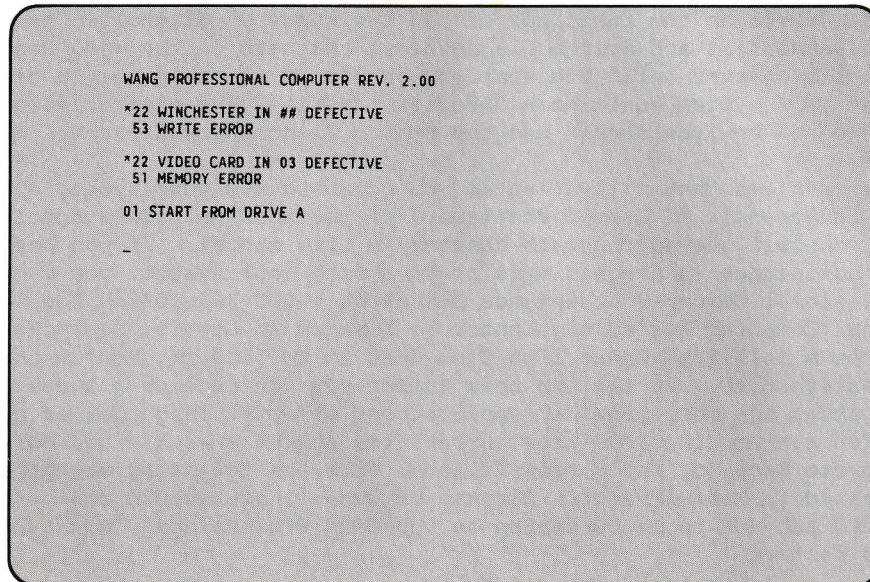


Figure B-1. Sample Defective Device Start-up Screen

B.3 USING THE SYSTEM DIAGNOSTICS DISKETTE

The System Diagnostics diskette is a piece of software that contains a wide range of diagnostic tests that can determine where your system is malfunctioning.

The Wang PC Assistance Center may ask you to use the System Diagnostics diskette to identify a problem indicated by an unsuccessful power-on diagnostics test. The personnel at the Assistance Center may also ask you to run the System Diagnostics to pinpoint a defective device reported on the Start-up screen. The following steps outline the procedure for using the System Diagnostics diskette.

System Diagnostics

STEP 1: Insert the System Diagnostics diskette in Drive A and power on your system. Read the System Diagnostics Disclaimer screen. (Refer to Figure B-2.)

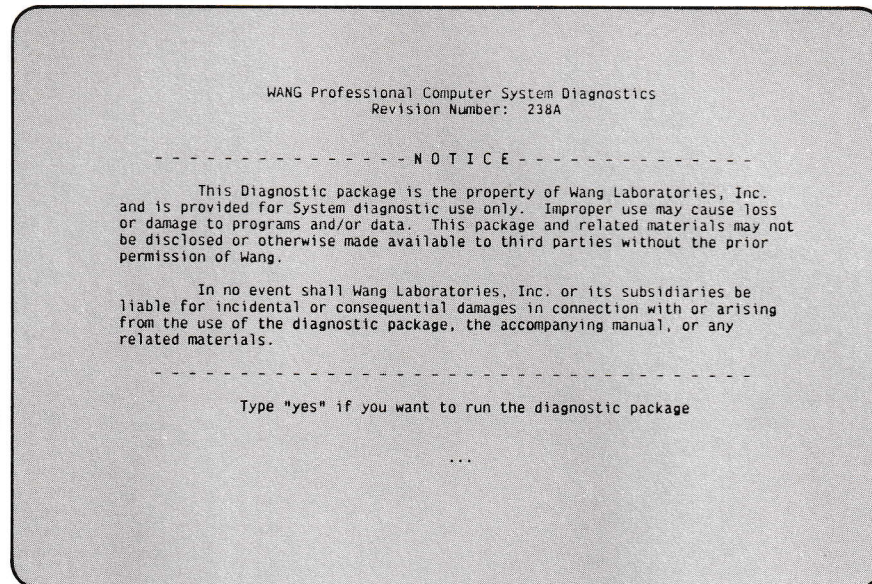


Figure B-2. The System Diagnostics Disclaimer Screen

STEP 2: Type the word **yes** to start the System Diagnostic tests. A System Diagnostics Menu similar to the one shown in Figure B-3 appears on the screen.

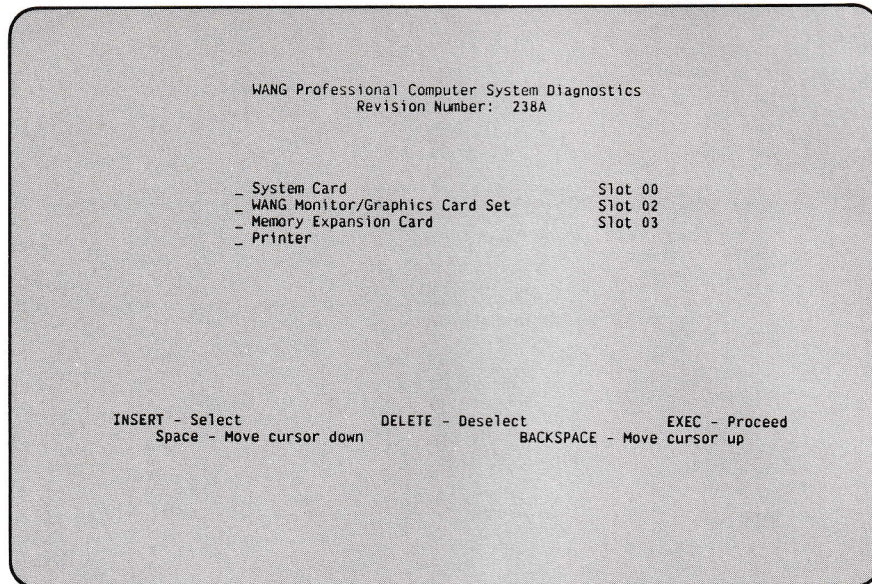


Figure B-3. Sample System Diagnostics Menu

NOTE:

If you decide not to run the System Diagnostic tests, remove the System Diagnostics diskette from Drive A. You can then reinsert System Diskette I, turn the power switch off and then on again, and restart your system.

This menu is customized for each Wang Professional Computer system. The menu displays the name of each card installed in your system and the expansion slot in which each one is located. This menu lists only those devices that your PC contains. All selections on the System Diagnostics menu with an acceptance block next to them are preselected tests. These tests run automatically after you press EXEC. The System card tests and the video card tests are preselected tests for all Wang PC configurations. If you have a loop back connector connected to the serial and parallel ports on the System card when you start your system, the menu also includes selections for parallel and/or serial port diagnostics. (Refer to the discussion of the Remote Communications Card test in Section B.3.2 for information on loop back connectors.) If your system includes other cards and/or a printer, the menu may also indicate that the tests for these devices are preselected.

System Diagnostics

If you want to deselect one of the preselected tests, use the space bar to move the cursor next to the item you want to deselect and press DELETE. Similarly, if you want to test items on the System Diagnostics menu that aren't preselected, move the cursor next to each item and press INSERT. An acceptance block appears next to each item you select.

NOTE:

Some diagnostic tests require special equipment or can only be run under certain conditions. Be sure to read Section B.3.2 before you run tests other than the System Card test.

STEP 3: Press EXEC to start the testing. While each test runs, a series of displays appear on your screen that report information to you about the status of the testing. Figure B-4 is a sample test screen.

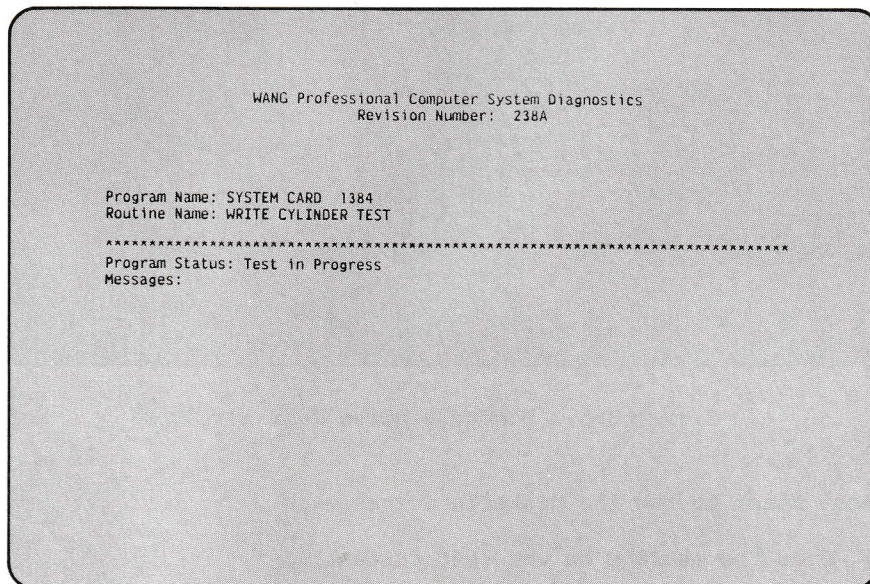


Figure B-4. Sample Test Screen

Each test is made up of various routines. The routines proceed one after another until the system detects an error. The Program Name field on the screen displays the name of the current test. The routine name changes as the various routines complete their testing. When all of the routines that make up a particular test finish, the program name changes and a new test begins. If an error occurs, the test screen freezes and the Likely Failing Module field in the report displays the one, two, or three most likely causes of the error. The Program Status field displays the current status of the testing. If the tests are waiting for you to input some information, the Program Status field contains the message "Enter Parameters." If an error occurs, the Program Status field displays an error message. The message area displays various types of information including warnings and instructions.

B.3.1 System Card Test

The System Card test includes routines that test the main memory and the diskette drives. Unless you deselect this test, the System Card test runs first. There is a pause in the System Card tests before the diskette drive tests begin. The display in Figure B-5 appears on the screen.

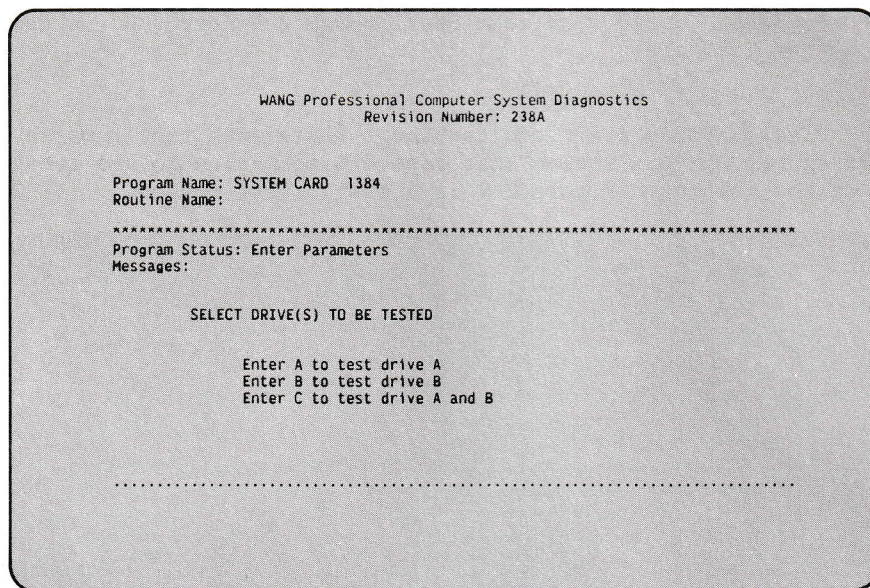


Figure B-5. Diskette Drive Test Screen #1

Follow these steps to run the diskette drive tests.

STEP 1: Read the message on the test screen.

STEP 2: Type A, B, or C and press EXEC. The screen in Figure B-6 appears.

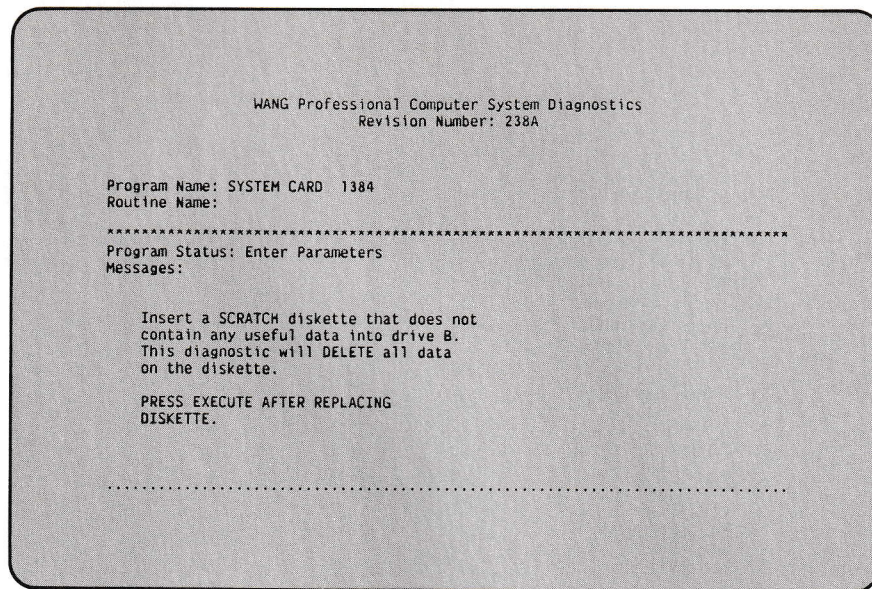


Figure B-6. Diskette Drive Test Screen #2

STEP 3: Replace the System Diagnostics diskette in Drive A with a blank diskette.

NOTE:

The testing involved in the System Card Format test reformats the diskette in Drive A. All of the files on the diskette in Drive A are erased in the reformatting process.

STEP 4: Press EXEC to continue with the System Card tests.

NOTE:

If you forget to replace the diagnostics diskette, the screen in Figure B-6 reappears along with the message "Drive A still has the PCDS diskette." The tests will not proceed until you replace the diagnostics diskette with a blank diskette and press EXEC.

STEP 5: Shortly after you press EXEC, the first screen for the Door Interrupt test appears on the screen. (Refer to Figure B-7.) Close the doors of the diskette drives and press EXEC.

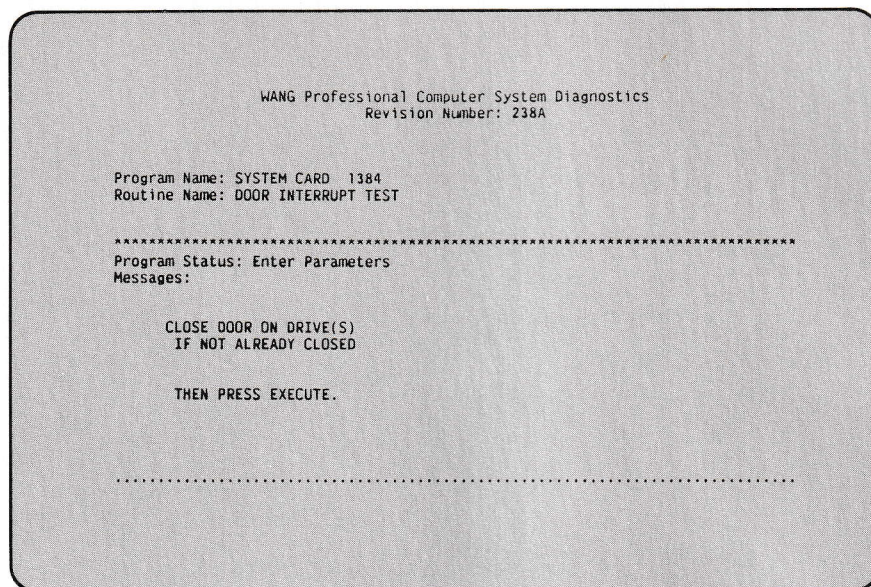


Figure B-7. Door Interrupt Test Screen #1

STEP 6: After you press EXEC, a second Door Interrupt test screen appears. (Refer to Figure B-8.) Open and close the doors of the diskette drives that are being tested and press EXEC.

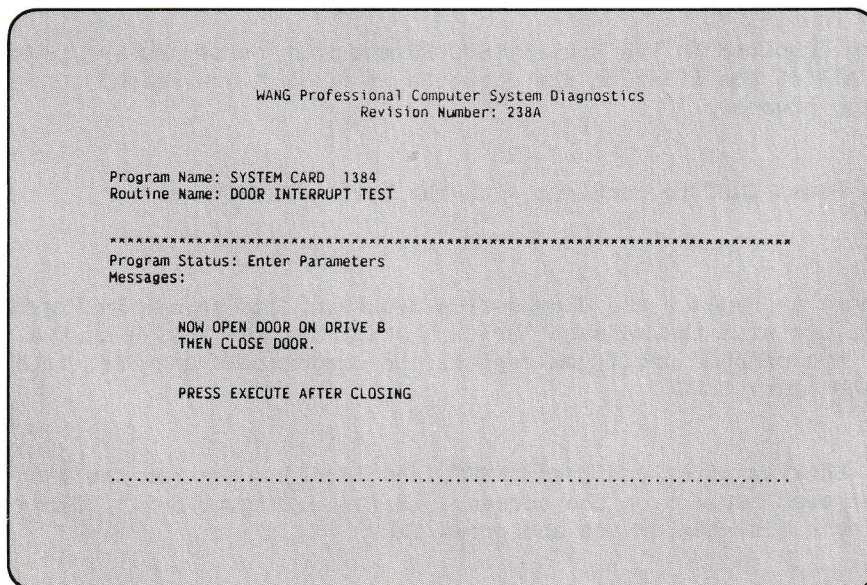


Figure B-8. Door Interrupt Test Screen #2

STEP 7: Remove the blank diskette when the test screen prompts you to do so. Reinsert the System Diagnostics diskette and press EXEC to continue with the other diagnostic tests.

NOTE:

If you forget to remove the blank diskette and attempt to proceed, the message "??Insure Diagnostics Diskette is installed??" appears on the screen. At this point, you must remove the blank diskette, reinsert the diagnostics diskette, and press any key except CANCEL to continue with the diagnostic tests.

B.3.2 Other Diagnostic Tests

In addition to the System Card test, the System Diagnostics diskette also contains diagnostic tests for the following devices:

- Expanded Memory card
- Winchester Controller card
- CP/M-80 Emulation card
- Wang monitor
- Industry-standard monitor
- Monitor/Graphics card set
- Local Communications card
- Remote Communications card
- Multiport Communications Controller (MCC) card
- Matrix printer
- Daisy printer

The System Diagnostics Menu (refer to Figure B-3) contains a selection for each item from the above list included on your PC. If you select any of these diagnostic tests, they run immediately after the System Card test, in the order that they appear on your menu. Many of these tests require no user intervention to run, or provide prompts that give you a sufficient explanation of what you must do to run them. The following tests, however, have special features, need additional equipment, or require an explanation before you attempt to run them.

- Winchester Controller Card test -- Please note that the Converging Diverging Seeks routine takes 1-1/2 minutes to complete, and the Sequential Reads Test routine requires 6-1/2 minutes. As long as the message "Stopped on Error" does not appear on the screen during these routines, you do not have a problem with your system.
- Monitor tests -- If you have a modem connected to a serial port, you must disconnect it before you can run any monitor diagnostics.

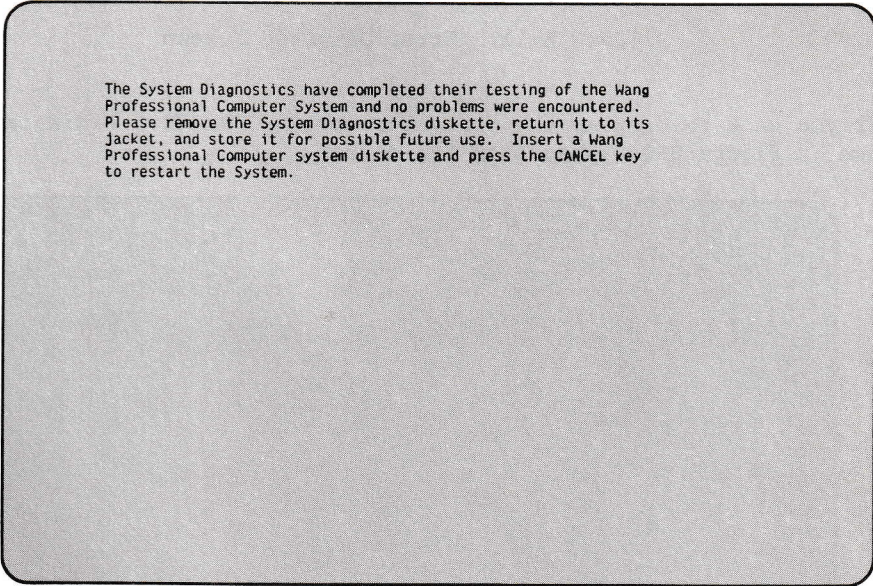
- Printer tests -- Make sure that your printer is on, properly connected, and has sufficient paper before you run a printer test. Also, at the start of the matrix printer diagnostics test, a menu appears listing the different matrix printer diagnostic routines that you can run. To run a routine, enter the number from 1 to 9 that corresponds to the routine you want to run and press EXEC. To run all routines, enter a 0 and press EXEC. To leave the matrix printer diagnostics, enter an X and press EXEC.
- Wang Monitor/Graphics Card Set test -- This test includes routines that test the appearance of various screen displays. During the first routine, a display of monitor card attributes appears. This display includes the complete PC character set, plus lines that appear in blinking, reverse video, bold, overscored, underscored, subscripted, and superscripted type. After you verify that this display is correct, press the MERGE key. The monitor alignment package routine then occurs. This consists of a title screen plus four alignment screen displays. Press any key on the keyboard to begin the test or to go from one routine to the next. (After the fourth screen, the routine returns to the first screen.) To exit this routine, press CANCEL.
- Remote Communications Card test -- You must install a parallel loop back connector (item #420-1104) and a serial loop back connector (item #420-1040) on the ports in the back of this card in order to run the diagnostic tests. (Contact your Wang representative for information on how to obtain these connectors.)

To install these connectors, you need only align the pins and sockets of both the connector and the port and press firmly. You cannot incorrectly mount the connector.

- Multiport Communications Controller (MCC) Card test -- This test requires the serial loop back connector in order to run. The back of the MCC card contains three serial ports. At the start of this test, the screen prompts you to install the serial loop back connector on Port 1 (the one closest to the fan). When you install the connector and press EXEC, the diagnostics run for Port 1. The screen then prompts you to install the connector on Port 2 (the port directly above Port 1) and press EXEC to run the diagnostics on Port 2. After the diagnostics finish for Port 2, you then install the connector on Port 3 and press EXEC to run the diagnostics for that port.

B.3.3 Final Diagnostic Screens

When all the System Diagnostic tests that you have selected are complete, one of two screens appears. If the System Diagnostics complete their testing without finding an error, the following screen appears.



The System Diagnostics have completed their testing of the Wang Professional Computer System and no problems were encountered. Please remove the System Diagnostics diskette, return it to its jacket, and store it for possible future use. Insert a Wang Professional Computer system diskette and press the CANCEL key to restart the System.

Figure B-10. No Error Detected Screen

However, if the System Diagnostics detect an error, you see the following screen.

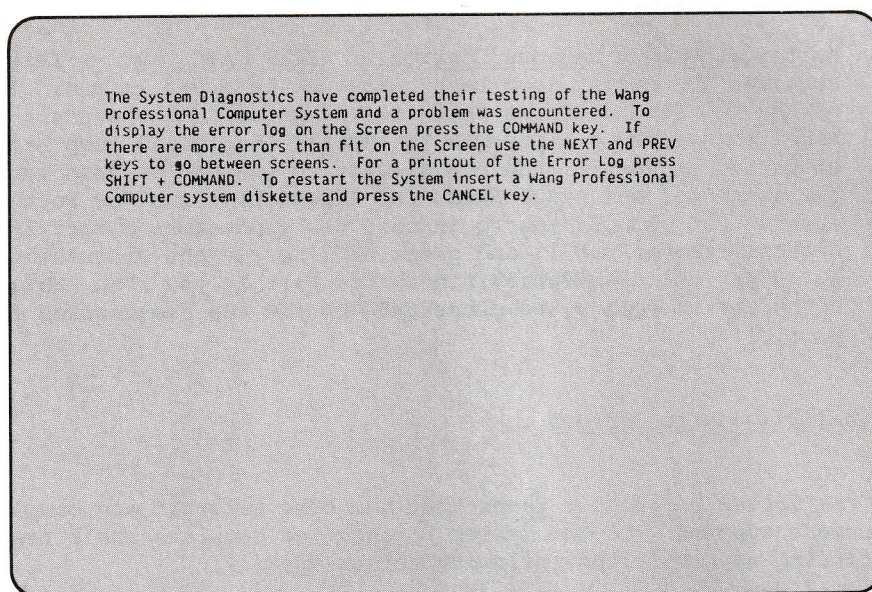


Figure B-11. Error Detected Screen

If you want to display the error log, press COMMAND. A display like the one shown in Figure B-12 appears on the screen.

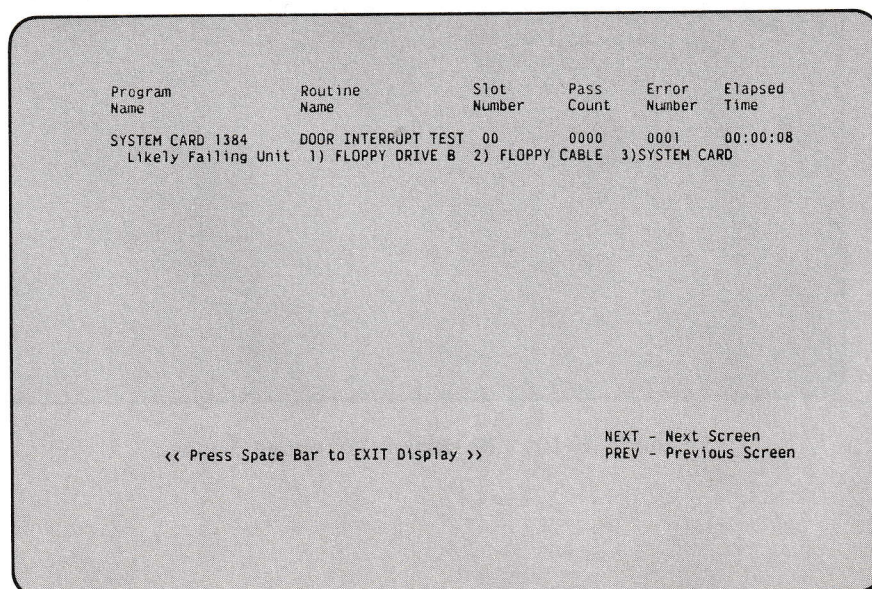


Figure B-12. Sample Error Log

System Diagnostics

If you want to print out the error log on the Wang matrix printer, press SHIFT and COMMAND simultaneously.

If the System Diagnostics pinpoint a defective component, you should call the Wang Professional Computer Assistance Center to determine what you should do next.

System Diagnostics

APPENDIX C

MESSAGES

This appendix contains the messages that the programs on System Diskettes I and II may display. It also includes a brief explanation of each message. The messages are listed in numerical order. The 2-digit number preceding each message is an international translation code that you can disregard if you are a domestic Wang PC user. This appendix also tells which version or versions of the start PROM the messages apply to. When two messages appear next to a number, the first message is the message for version 2.00 of the start PROM, and the message that follows it in parentheses applies to version 1.00 of the start PROM.

The messages incorporate various device names and expansion slot numbers. The list of device names contained in the messages includes the following:

- DRIVE A
- DRIVE B
- WINCHESTER
- VIDEO CARD
- LOCAL COM OPTION (version 2.00 only)
- OPTION CARD (version 2.00 only)
- SERIAL PORT
- PARALLEL PORT
- KEYBOARD

The range of legal slot numbers is from 01 to 15 (decimal). (Refer to Figure 9-3.) Messages that refer to the System card do not include a slot number.

WANG PROFESSIONAL COMPUTER REV. 2.00 (WANG PROFESSIONAL COMPUTER. REV 1.00)

The system is performing the power-on diagnostics and preparing to start. The revision number displayed is the version of the EPROM in your system.

Messages

01 START FROM device (WILL START FROM device)

This message indicates which start-up device the system will start from. The system uses the list of priority start-up devices described in Appendix G to select the start-up device. When this message appears on the screen, the power-on diagnostics have completed their tests. There is a 3-second pause after this message appears during which you can enter one of the following 1-letter commands: G (truncates the 3-second pause); P (runs the power-on diagnostics again); Q (executes a quick restart); D (redirects the start to another device); I (redirects console input to another device); or O (redirects console output to another device). Refer to Appendix G for a further explanation of these commands.

02 STARTING FROM device (version 1.00 only)

This message appears when the 3-second delay is over. The system is now ready to begin the final start-up sequence.

10 GO (version 2.00 only)

The feedback response that appears on the screen when you press G during the 3-second delay after the 01 START FROM device message. This truncates the 3-second delay.

11 RETRY (version 2.00 only)

The feedback response that appears on the screen when you press R after a START FAILED message. The system attempts the start sequence again.

12 QUICK RESTART (version 2.00 only)

The feedback response that appears on the screen when you press Q after a START FAILED message or during the 3-second delay after the 01 START FROM device message. The system attempts to restart, but does not diagnose memory.

13 POWER-UP DIAGNOSTICS (version 2.00 only)

The feedback response that appears on the screen when you press P after a START FAILED message or during the 3-second delay after the 01 START FROM device message. The system attempts to restart and runs the full power-on diagnostics.

14 RE-DIRECT START (version 2.00 only)

The feedback response that appears on the screen when you press D after a START FAILED message or during the 3-second delay after the 01 START FROM device message. This allows you to direct the start to a desired device, bypassing the normal hierarchy of start-up devices. (Refer to Appendix G.)

Messages

*21 device IN ## DEFECTIVE (device IN SLOT ## DEFECTIVE)

This warning appears for each start-up device and console output device that fails the power-on diagnostics. If the diagnostics can determine a reason for the problem, it appears directly underneath this message. Possible reasons are listed as messages 50-69 in this appendix.

*22 device DEFECTIVE (both versions)

This warning appears for each System card device, such as Drive B, that fails the power-on diagnostics. If the diagnostics can determine a reason for the problem, it appears directly underneath this message. Possible reasons are listed as messages 50-69 in this appendix.

***40 NO AUTO-START DEVICE (both versions)

The system could not find a usable start device during the start-up sequence. This message can occur if all of the auto-start devices (Drive A, Drive B, and the Winchester) are defective or nonexistent. You can also cause this message to appear if your system does not include a Winchester drive and you leave the diskette drive doors open while the system is starting. You must correct this situation before the system can proceed.

***41 START FAILED (both versions)
device - reason

The system encountered a serious error during the start-up sequence. You must correct this error before the system can start. Reasons that can appear in this type of message are listed as messages 70-76 in this appendix.

***42 INVALID INTERRUPT (both versions)

The system encountered an invalid interrupt during the start-up sequence. You must correct this condition before the system can start.

***43 PARITY ERROR (both versions)

The system encountered a memory parity error during the start-up sequence. You must correct this condition before the system can start.

***44 SYSTEM FILES MISSING (both versions)

The system cannot proceed until you restart the system from a diskette or Winchester disk that contains the system files.

***45 DISK READ ERROR (both versions)

The system cannot read the disk in the default drive. You can create this condition by starting from a defective or unformatted diskette or a defective or unformatted Winchester disk.

***46 DEFECTIVE START DISK (both versions)

The diskette or Winchester disk you are trying to start the system from contains invalid File Allocation Table (FAT) data.

***47 MISSING SYSTEM FILE (version 2.00 only)
[- file name]

The system file [- file name] is missing on the source from which you are trying to start.

***48 READ ERROR
[- device]

A read error occurred on the source from which you are trying to start. The message lists the device, if known, to localize the problem.

50 OR MISSING (version 1.00 only)

The device listed in message 21 or 22 is not installed in or connected to the system.

51 MEMORY ERROR (both versions)

The device listed in message 21 or 22 has a problem with its memory. In version 2.00, this message also lists the specific failure, if known.

52 READ ERROR (both versions)

A problem has occurred in transferring data from the option to the system. In version 2.00, this message also lists where the problem occurred, if known.

53 WRITE ERROR (both versions)

A problem has occurred in transferring data from the system to the option. In version 2.00, this message also lists where the problem occurred, if known.

54 DMA ERROR (both versions)

The Direct Memory Access chip is not transferring data correctly. In version 2.00, this message also lists where the problem occurred, if known.

55 STATUS ERROR (both versions)

A device or LSI chip returned an incorrect or bad status. In version 2.00, this message also lists the device, if known.

56 LOOP BACK (both versions)

There is a loop back connector attached.

Messages

57 SYSTEM CARD FAILURE (both versions)

One or more components on the System card have failed.

NOTE:

In messages 58 through 64, if the word specific appears in brackets, the message lists the specific device, if known, to localize the problem. If the word specific does not appear in brackets, the message always lists the specific device.

58 NOT READY [- Specific] (version 2.00 only)

A ready condition that was expected did not occur.

59 INIT FAILED [- Specific] (version 2.00 only)

Initialization failed.

60 MISSING Specific (version 2.00 only)

The specific signal or status did not occur (for example, MISSING VERT. SYNC.)

61 PROCESSOR FAILURE [- Specific] (version 2.00 only)

A microprocessor has failed.

62 REGISTER FAILURE [- Specific] (version 2.00 only)

A register failed.

63 INVALID Specific (version 2.00 only)

The specific is invalid (for example, INVALID COMMAND or INVALID STATUS.)

64 FAILED TO Specific (version 2.00 only)

During the power-on diagnostics, the specific failed to occur.

69 RAM SPACE EXHAUSTED (version 2.00 only)

The device could not be tested because too little room remains in RAM to copy the diagnostic PROM.

70 device READ ERROR (both versions)

A read failed on the particular device because the disk has defective data or the disk is not formatted correctly. In version 2.00, this message indicates that there is defective data on the disk. See also message 74.

71 device NO WANG START TRACK (both versions)

The disk in the start-up drive does not have a valid Wang start-up track.

72 device NOT READY (both versions)

The start-up device was not ready. You can cause this message to appear if you forget to insert a diskette in Drive A or B and have the door closed when you start your system.

73 device FAILURE (both versions)

Failure occurred for a reason other than those listed in messages 70 through 72 or 74 through 76.

74 device FORMAT FAILURE (version 2.00 only)

The read failed because of a format error.

75 device CAN'T FIND START
FILE (version 2.00 only)

The system cannot find the start file through the Local Communications card, Network card, or other device.

76 device INVALID START FILE (version 2.00 only)

The start file from the Local Communications card, Network card, or other device contains invalid data. This message is equivalent in meaning to message 71.

91 LOOPING ON POWER-UP (both versions)

The machine is in diagnostic mode, and is running its power-on diagnostics continuously. This occurs because the switch SW-1 (a 4-position DIP switch) on the System card is set to 0000 (all closed or all on).

Refer to The Wang Professional Computer Utility Programs User Guide for a listing and explanation of error messages that are not preceded by a number.

APPENDIX D KEYBOARD CODES

Table D-1 lists the Wang Professional Computer character set.

Table D-1. The Wang PC Character Set

Decimal	Hex	Character or Explanation
000	00	Null
001	01	Edit line where error occurred
002	02	Previous word
003	03	Stop program and return to BASIC command level
004	04	
005	05	Erase from cursor to end of logical line
006	06	Next word
007	07	Sound alarm
008	08	Destructive backspace
009	09	Tab
010	0A	Line feed
011	0B	Home cursor
012	0C	Clear screen and home cursor
013	0D	Carriage return
014	0E	Append to end of line
015	0F	
016	10	
017	11	Resume program listing on screen or printer
018	12	Toggle insert mode
019	13	Suspend program listing on screen or printer
020	14	Activate and update function key display
021	15	Clear logical line
022	16	
023	17	Delete word
024	18	
025	19	
026	1A	Clear from cursor to end of screen
027	1B	Cursor right/Escape
028	1C	Cursor left
029	1D	Cursor up
030	1E	Cursor down
031	1F	Delete character at cursor location

Keyboard Codes

Table D-1. The Wang PC Character Set (continued)

Decimal	Hex	Character or Explanation
032	20	Space
033	21	Exclamation point !
034	22	Double quote "
035	23	Number sign #
036	24	Dollar sign \$
037	25	Percent sign %
038	26	Ampersand &
039	27	Single quote '
040	28	Left parenthesis (
041	29	Right parenthesis)
042	2A	Asterisk *
043	2B	Plus sign +
044	2C	Comma ,
045	2D	Minus sign -
046	2E	Period .
047	2F	Slash /
048	30	0
049	31	1
050	32	2
051	33	3
052	34	4
053	35	5
054	36	6
055	37	7
056	38	8
057	39	9
058	3A	Colon :
059	3B	Semicolon ;
060	3C	Less than sign <
061	3D	Equal sign =
062	3E	Greater than sign >
063	3F	Question mark ?
064	40	At sign @
065	41	A
066	42	B
067	43	C
068	44	D
069	45	E
070	46	F
071	47	G
072	48	H
073	49	I
074	4A	J
075	4B	K
076	4C	L
077	4D	M
078	4E	N
079	4F	O
080	50	P

Keyboard Codes

Table D-1. The Wang PC Character Set (continued)

Decimal	Hex	Character or Explanation
081	51	Q
082	52	R
083	53	S
084	54	T
085	55	U
086	56	V
087	57	W
088	58	X
089	59	Y
090	5A	Z
091	5B	Left bracket [
092	5C	Backslash \
093	5D	Right bracket]
094	5E	Up arrow ↑
095	5F	Underscore _
096	60	Open quote " "
097	61	a
098	62	b
099	63	c
100	64	d
101	65	e
102	66	f
103	67	g
104	68	h
105	69	i
106	6A	j
107	6B	k
108	6C	l
109	6D	m
110	6E	n
111	6F	o
112	70	p
113	71	q
114	72	r
115	73	s
116	74	t
117	75	u
118	76	v
119	77	w
120	78	x
121	79	y
122	7A	z
123	7B	Left brace {
124	7C	Vertical bar
125	7D	Right brace }
126	7E	Approximate symbol ~
127	7F	Cent sign ¢
128	80	Degree sign °
129	81	Center graphic ◆

Keyboard Codes

Table D-1. The Wang PC Character Set (continued)

Decimal	Hex	Character or Explanation
130	82	Tab graphic ►
131	83	Return graphic ◄
132	84	Indent graphic →
133	85	Decimal tabulation graphic
134	86	Format graphic
135	87	Stop graphic
136	88	Note graphic
137	89	Merge graphic
138	8A	Down arrow ↓
139	8B	Up arrow ↑
140	8C	Left arrow ←
141	8D	Plus-or-minus sign ±
142	8E	Inverted exclamation
143	8F	Inverted question mark
144	90	A circumflex
145	91	A grave
146	92	A acute
147	93	A umlaut
148	94	A tilde
149	95	Left arrow
150	96	A angstrom
151	97	Down arrow
152	98	Ligature AE
153	99	C cedilla
154	9A	Double dagger
155	9B	Bullet
156	9C	E circumflex
157	9D	E grave
158	9E	E acute
159	9F	E umlaut
160	A0	a circumflex
161	A1	a grave
162	A2	a acute
163	A3	a umlaut
164	A4	a tilde
165	A5	Right arrow
166	A6	a angstrom
167	A7	Dagger
168	A8	Ligature ae
169	A9	c cedilla
170	AA	Ballot box
171	AB	Required space
172	AC	e circumflex
173	AD	e grave
174	AE	e acute
175	AF	e umlaut
176	B0	G hacek
177	B1	IJ ligature

Keyboard Codes

Table D-1. The Wang PC Character Set (continued)

Decimal	Hex	Character or Explanation
178	B2	Dotted I
179	B3	I circumflex
180	B4	I grave
181	B5	I acute
182	B6	I umlaut
183	B7	Catalonian LL ligature
184	B8	N tilde
185	B9	O circumflex
186	BA	O grave
187	BB	O acute
188	BC	O umlaut
189	BD	O tilde
190	BE	OE ligature
191	BF	slashed O
192	C0	G hacek
193	C1	ij ligature
194	C2	dotless i
195	C3	i circumflex
196	C4	i grave
197	C5	i acute
198	C6	i umlaut
199	C7	Catalonian ll ligature
200	C8	n tilde
201	C9	o circumflex
202	CA	o grave
203	CB	o acute
204	CC	o umlaut
205	CD	o tilde
206	CE	oe ligature
207	CF	slashed o
208	D0	Icelandic Thorn
209	D1	Icelandic Eth
210	D2	Y acute
211	D3	S cedilla
212	D4	Open Quote
213	D5	u circumflex
214	D6	u grave
215	D7	u acute
216	D8	u umlaut
217	D9	Copyrighted symbol
218	DA	Registered Trademark symbol
219	DB	Prescription symbol
220	DC	a superior (for Number abbrev.)
221	DD	European open quotes
222	DE	section symbol
223	DF	paragraph symbol
224	E0	Icelandic thorn
225	E1	Icelandic eth

Keyboard Codes

Table D-1. The Wang PC Character Set (continued)

Decimal	Hex	Character or Explanation
226	E2	y acute
227	E3	s cedilla
228	E4	close quote
229	E5	u circumflex
230	E6	u grave
231	E7	u acute
232	E8	u umlaut
233	E9	Trademark symbol
234	EA	International Monetary Symbol
235	EB	double arrow
236	EC	o superior (for Number abbrev.)
237	ED	European close quotes
238	EE	Beta
239	EF	centered dot
240	F0	pound sterling
241	F1	florin
242	F2	yen
243	F3	1/4
244	F4	1/2
245	F5	3/4
246	F6	accent circumflex
247	F7	accent grave
248	F8	accent acute
249	F9	accent umlaut (diaeresis)
250	FA	accent tilde
251	FB	accent cedilla
252	FC	accent hacek
253	FD	accent breve
254	FE	5 unit space
255	FF	Dead key

APPENDIX E SYSTEM SUMMARY

E.1 OVERVIEW

The System Summary is a chart that presents technical information about the Wang Professional Computer. You can create a profile of your system by checking off or filling in the appropriate information about each hardware and software option you have purchased. This system profile can serve as a valuable reference tool if you decide to expand your system, purchase additional software, or arrange for service or repair.

The System Summary contains a technical overview of each component. The information in the unshaded sections of the chart describes the technical capabilities of the standard Wang PC Base Unit. The information shown in the shaded sections explains the technical capabilities of the optional parts of the Wang Professional Computer.

In each shaded section, you can fill in the box next to the option currently installed in your system. Whenever you have a component that is not Wang-supplied, use the lines provided on the chart to record the requested information about that component.

If you take the time to keep the System Summary up to date, you will always have a current technical overview of your system. As a result, when you or someone else using your system needs this kind of information -- for example, to determine whether your system has enough memory to run a particular application -- that information will be easily accessible.

E.2 YOUR WANG PROFESSIONAL COMPUTER SYSTEM

HARDWARE

Electronics Unit Serial # _____ Model # _____	Dimensions: 23.1 x 14.9 in. x 6.5 in. Weight: 28-35 lb. Power Requirements: 115 or 230 VAC Expansion Slots: 5
(Optional) Desk Clamp	Restrictions: Desk must have at least a 3/4 in. lip. Length: 21.6 in. Weight: 1.5 lb.
Central Processing Unit	Microprocessor: Intel 8086 Type: 16-bit Speed: 8MHz
(Optional) Coprocessor Intel 8087	Type: 16-bit Speed: 8MHz Function: High-speed numeric data processing
Memory	Random Access Memory: 128KB parity checked Access Time: 200ns for each 64K-bit RAM chip Cycle Time: 350Hz for each 64K-bit RAM chip
(Optional) Additional Memory (maximum total 640KB)	128KB card 256KB card 384KB card 512KB card
Total main memory in this system is:	
128KB	256KB
384KB	512KB
	640KB
Erasable Programmable Read Only Memory	Size: 8KB Functions: Power-on diagnostics Start-up instructions (bootstrap)

System Summary

HARDWARE

Communications	Type: Serial RS-232-C Baud Rates: 16 common rates between 50 and 19,200 Discipline: Asynchronous, Synchronous Mode: half or full duplex Protocols Supported: 3270, 2780/3780, Remote Wangnet, Local Wangnet
Diskette Drive Unit	Description: 5 1/4 in. drive Uses: DSDD or SSDD diskettes, 8 or 9 sectors per track Records At: 48 tracks per inch Storage/Diskette: 360KB
(Optional) Second Diskette Drive	(Same specifications as first diskette drive)
Winchester Disk Drive	Type: Winchester Media Size: 5 1/4 in. Maximum Memory: 10MB
Clock	Type: 8MHz
Keyboard	Home Row Key Height: 1.2 in. Keys: 101 Dimensions: 18.3 in. x 7.8 in. x 1.7 in. Weight: 4.5 lb. Programmable LEDs: 5 Key Groups: typewriter word processing/special function numeric editing cursor control special operations Operates At: 62.5 baud Keyboard Interface: UART (Universal Asynchronous Receiver Transmitter) Audio: 3 tones, 2" speaker

System Summary

HARDWARE

Video Card Options:

Industry-standard
Monitor/Graphics card with
Monochrome Monitor:

Screen Size: 80 x 25 characters
Graphics Resolution: 640 x 225 dots

or

Industry-standard
Monitor/Graphics card with
Color Monitor:

Screen Size: 80 x 25 characters
Graphics Resolution: 640 x 225 dots
Number of Colors: 8 to 16, depending on
monitor
Character Cells: 120 dot (10x12)

Wang Monochrome Monitor

Screen Size: 12 in. diagonal
Dimensions: 13 in. x 10.8 in. x 11.8 in.
Weight: 14 lb.
Controls: Brightness, Contrast

Wang Monitor Card

Monochrome Display: 80 x 25 characters

Wang Graphics Card

Graphics Resolution: 800 x 300 dot

Monitor Arm

Range of Motion: 90, 180, 360 degrees
Control of Screen: Tilts up, down, left, or
right

Other Available Monitors

Make: _____
Model: _____
Serial # _____

Color Monitor

Screen Size: _____
Dimensions: _____
Weight: _____
Power: _____
Controls: _____

System Summary

HARDWARE

Printers:

Wang Matrix Printer
Serial # _____

Dimensions: 14.7 in. x 12 in. x 4.2 in.
Weight: 12-15.4 lb.
Speed: 80 CPS

Wang Daisy Printer
Serial # _____

Dimensions: 19.5 in. x 12.5 in. x 9 in.
Weight: 43 lb.
Power: 115 or 230 VAC
Speed: 20 CPS

Wang PC-PM012 Printer
Serial # _____

Dimensions: 24.25 in. x 17.75 in. x 9.5 in.
Weight: 50 lb.
Speed: 20 CPS

Other Compatible Printer

Make: _____
Model: _____
Serial # _____

Optional Cards

Local Wangnet

Connected To: _____

Remote Wangnet

SOFTWARE

System Diskettes

Operating System: Wang-enhanced MS-DOS
Version 2.0
Diagnostics: System Diagnostics diskette
Language: Wang interpretive BASIC

Optional Languages

Wang PC BASIC Compiler
Wang PC COBOL Compiler
Wang PC FORTRAN Compiler
Wang PC Pascal Compiler
Wang PC Assembly Language

Optional Software Support

PC Asynchronous Communication
PC Remote WangNet
PC Local WangNet

Optional Applications Software

Multiplan
Word Processing
Other: _____

System Summary

DOCUMENTATION

Documentation Guide
Introductory Guide
Utility Programs User Guide
BASIC Language Guide

Manuals Included with Purchase of the Appropriate Software Packages

Program Development Guide
Language Reference Manuals
Application Training and Reference Manuals

System Summary

APPENDIX F REPACKING YOUR SYSTEM

F.1 INTRODUCTION

The purpose of this appendix is to provide you with the instructions necessary to disconnect and transport your Wang Professional Computer system. It is important to follow these instructions if you are repackaging your system prior to sending it out for repair, or if you are moving it from one location to another.

F.2 REPACKING YOUR SYSTEM

The first step in repacking your system is to disconnect the components. Disconnect the power cord, monitor cables, and keyboard cables, as shown in Figure F-1.

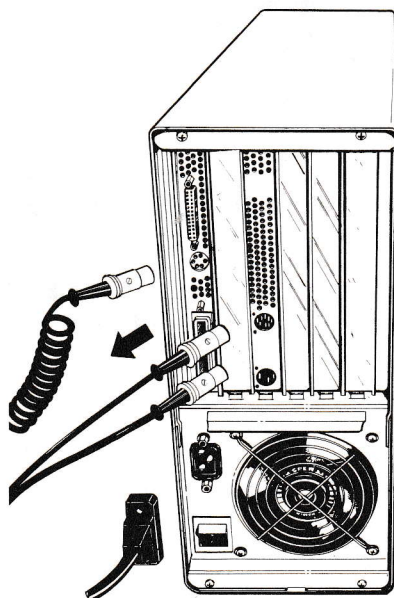


Figure F-1. Disconnecting the Wang Professional Computer

For more complete instructions on how to disconnect each component, refer to Chapter 2 and simply reverse the order of the procedures. If you have a printer, refer to your printer manual and reverse the unpacking and connecting procedures.

When you begin to repack your system, always use the original boxes and packing material. Place the foam cushions back on the equipment before you box each piece; this will ensure that the cushions are aligned properly. It is important to use the foam cushions, since moving the components subjects them to considerable vibration and shock. The foam cushions your PC was packed in were designed to absorb this shock and to protect the equipment from damage.

STEP 1: Repack the keyboard as shown in Figure F-2.

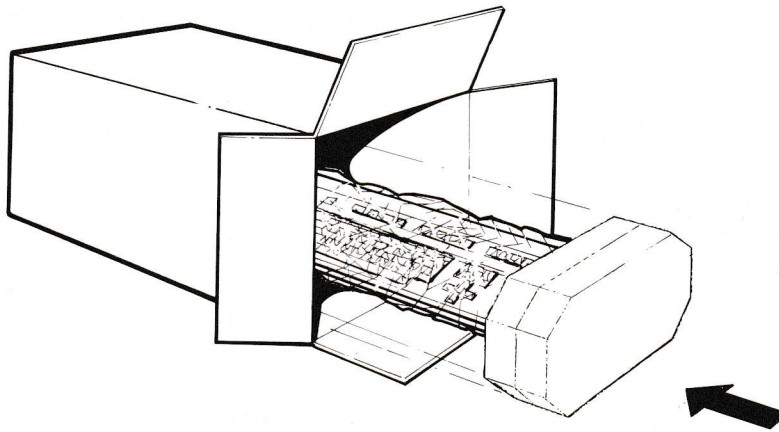


Figure F-2. Repacking the Keyboard

STEP 2: Repack the electronics unit as shown in Figure F-3. Be sure to replace the diskette drive shipping protector(s).

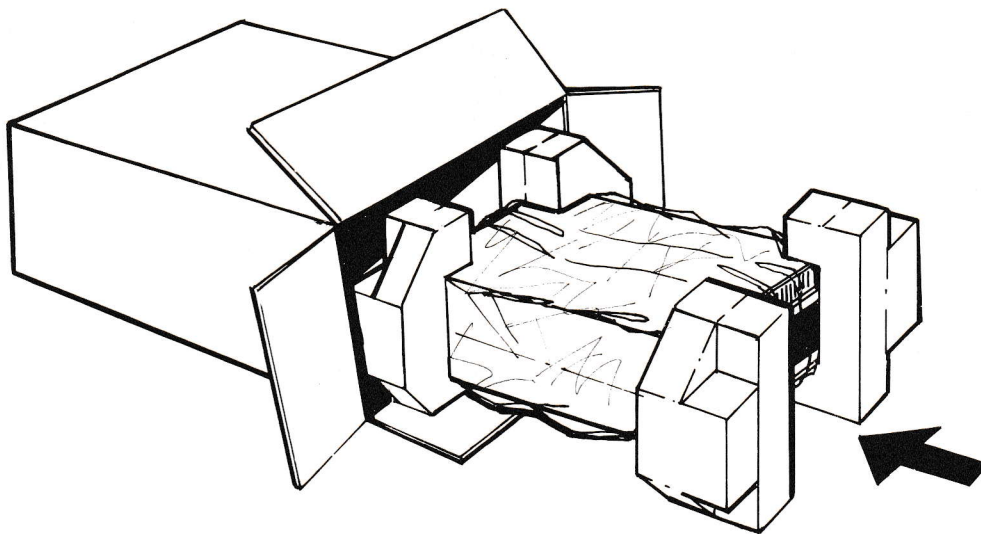


Figure F-3. Repacking the Electronics Unit

STEP 3: Repack the Wang Monochrome Monitor as shown in Figure F-4.

CAUTION:

Use special care when handling the monitor; the CRT (Cathode Ray Tube) contains glass, which can break and implode. It is best to grasp the monitor on both sides, rather than on the front and rear.

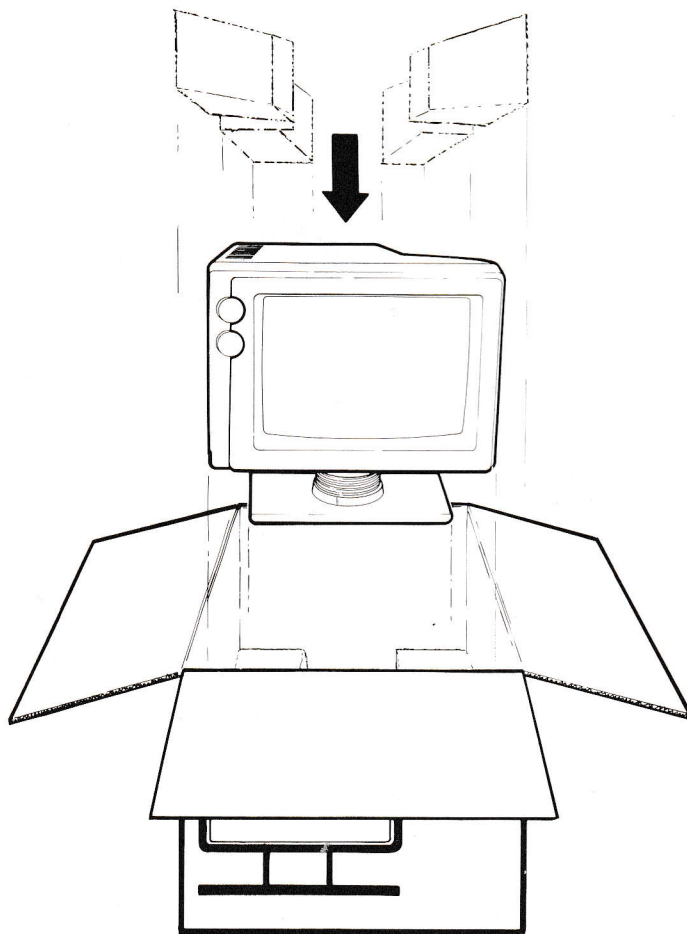


Figure F-4. Repacking the Wang Monochrome Monitor

STEP 4: Inspect each box to make sure that all components are correctly packed in their respective boxes.

STEP 5: Seal each box with industrial-strength packaging tape.

Repacking Your System

APPENDIX G START-UP PROCEDURES

The Wang Professional Computer provides you with an extremely flexible set of start-up options that you can use to direct the start of your system. This appendix reviews the details of the normal start-up procedure and indicates how you can use the various start-up options.

The start-up sequence in the Wang PC begins as soon as the power-on diagnostics finish testing the system's components. If the power-on diagnostics do not find any problems with your system, the following Start-up display appears on your screen.

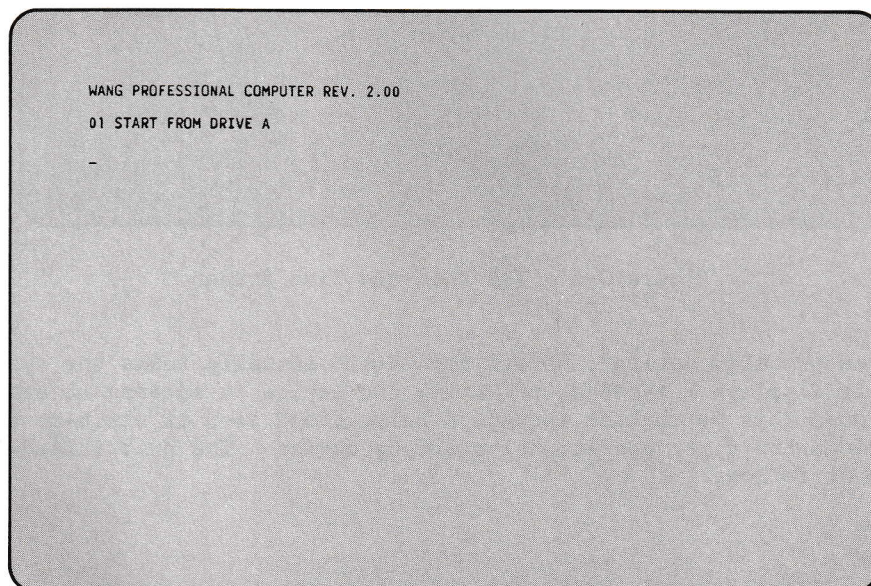


Figure G-1. Sample Start-up Screen

NOTE:

If you have version 1.00 of the start PROM, the following messages appear on this screen:

```
WANG PROFESSIONAL COMPUTER. REV 1.00.  
01 WILL START FROM DRIVE A  
02 STARTING FROM DRIVE A
```

If you are using a single drive system or a Winchester drive system with version 1.00 of the start PROM, your system displays the messages ***22 DRIVE B DEFECTIVE and 50 OR MISSING. These are merely informational messages that indicate that the second diskette drive (Drive B) is not present in your system. They do not interfere with the start-up sequence.

If the start-up is successful, the next screen you see is the Date and Time screen, as shown in Figure G-2.

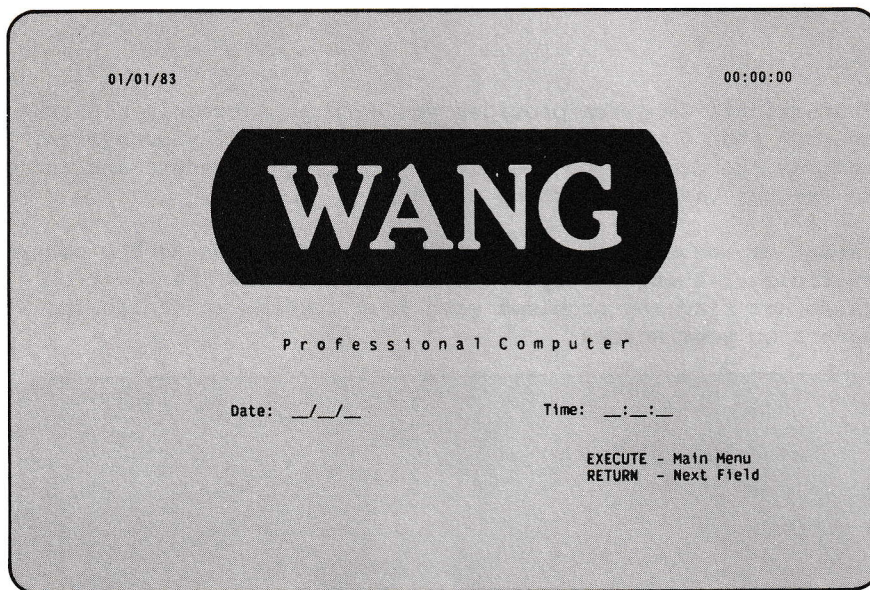


Figure G-2. The Date and Time Screen

As you probably noticed, before the system actually reads the system software, it displays a message indicating the device it intends to start from. It does this by running through a prioritized list of start-up devices until it finds the first operational start-up device. The prioritized list of devices is as follows:

- DRIVE A
- DRIVE B
- LOCAL COMMUNICATIONS OPTION and all future start options
- WINCHESTER (DRIVE C)

For start devices other than Drives A, B, and C, the system checks the Local/Remote switches. The system selects the device in the lowest numbered slot that has its switch set on Remote as the start-up device.

Start-up Procedures

If you want to specify a particular start-up device, you can do this using the prioritized list of devices. For example, if you want your system to start from Drive B, open the door to Drive A, turn on the power switch or restart the system, and insert System Diskette I in Drive B. If you want to start the system from the Winchester drive, open the door of the diskette drive and turn on or restart your system. In order for your system to start successfully from the Winchester, there must be a copy of the system software on the Winchester disk.

Assuming you start your system from Drive B, once the power-on diagnostics conclude their testing, a message appears on the Start-up screen. If you have version 2.00 of the start PROM, the following message appears.

01 START FROM DRIVE B

The cursor then appears directly to the right of this message for three seconds. For version 1.00 of the start PROM, the messages that appear are the following.

01 WILL START FROM DRIVE B
02 STARTING FROM DRIVE B

In either version of the start PROM, you can truncate the 3-second delay after the number 01 message appears by entering the 1-letter command G.

If the system starts successfully, the Date and Time screen appears. If the system cannot start, a message similar to the one shown below appears.

***41 START FAILED:
72 DRIVE B - NOT READY

This message indicates that the start-up sequence failed because Drive B is not ready to start. Check Drive B to make sure you have correctly loaded System Diskette I. There are a variety of other messages that indicate problems encountered during the start-up sequence. You can find a complete list of these start-up messages in Appendix C. Messages that are preceded by three asterisks indicate a serious problem and require you to correct the cause of the start-up failure before you can proceed.

NOTE:

The numbers preceding each message are designed as an aid to Wang's international customers. These numbers have no importance to Wang's domestic customers.

In any event, you have several choices about how to proceed after you receive a START FAILED message. After you correct the cause of the problem, you can restart your system or respond to the prompt under the message by typing a one-letter command. These commands are as follows.

- P -- Reruns the power-on diagnostics and attempts to restart. For version 2.00 of the start PROM, the message 13 POWER-UP DIAGNOSTICS appears on the screen when you press P.

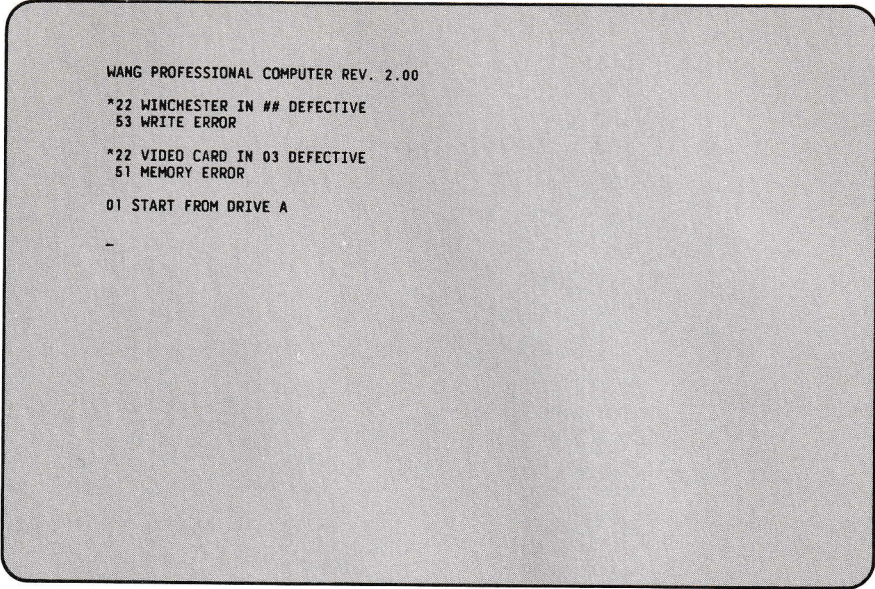
Start-up Procedures

- R -- Attempts the start procedure again; no diagnostics run. In version 2.00 of the start PROM, the message 11 RETRY appears on the screen when you press R.
- Q -- (version 2.00 only) Pressing Q executes a quick restart. The message 12 QUICK RESTART appears on the screen. The resulting restart procedure skips most of the time-consuming memory tests.
- D -- During the start-up process, allows you to direct the start to a desired start-up device, bypassing the normal start-up device hierarchy. In version 2.00 of the start PROM, the message 14 RE-DIRECT START appears on the screen when you press D.
- I -- Allows you to direct console input from a specified device.
- O -- Allows you to direct console output from a specified device.

The start-up options and messages are the same for the Winchester drive as they are for the diskette drive, so you can use all of the same procedures to start up your system from the Winchester. Make sure that you have copied System Diskette I to the Winchester disk (refer to Section 8.2) before you attempt to start your system from the Winchester. Failure to do this will cause a message similar to the following to appear:

```
***41 START FAILED
    71 WINCHESTER NO WANG START TRACK
```

If the power-on diagnostics detect an error while testing a start-up device, the Start-up screen displays a defective device error as illustrated in Figure G-3.



```
WANG PROFESSIONAL COMPUTER REV. 2.00  
*22 WINCHESTER IN ## DEFECTIVE  
53 WRITE ERROR  
*22 VIDEO CARD IN 03 DEFECTIVE  
51 MEMORY ERROR  
01 START FROM DRIVE A
```

Figure G-3. Sample Defective Device Message

The sample message indicates that the power-on diagnostic tests have found that the Winchester drive in Slot ## is defective and therefore cannot be used as a start-up device. The sample message also indicates that a video card is defective. Notice that the messages tell you the expansion slots in which the defective devices are located. (Refer to Figure 9-3.) Since Drive A is available as a start-up device and a second video card is functioning normally, the system can start. However, you will not be able to use the Winchester drive or the defective video card until they are repaired. The single asterisk preceding the messages on the sample screen indicates that although you have a problem, it isn't serious enough to interfere with the start-up. The Start-up screen displays as many defective device messages as your system can generate. You can find a complete description of defective device error messages in Appendix C.

APPENDIX H CHANGING THE VOLTAGE SETTING

The Wang Professional Computer has a power supply that allows you to set the voltage at either 115 or 230 volts AC. The label on the back of the electronics unit indicates that the power supply was set at 115 volts AC at the time the electronics unit was manufactured.

CAUTION:

If you need to use 230 volts AC, you must reset the voltage selector switch located inside the electronics unit before you connect or use your system. Failure to change the voltage selector can seriously damage your system. Disconnect the power cord and all other connections from the back of the electronics unit before you start this procedure.

Use the following steps to change the voltage setting.

STEP 1: Remove the cover from the electronics unit by following the procedure described in Section 9.2.1.

STEP 2: Locate the voltage selector switch. (Refer to Figure H-1.)

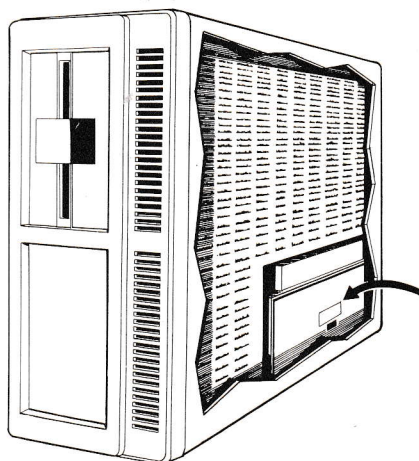


Figure H-1. The Voltage Selector Switch

The detail in Figure H-2 shows the position the switch is in when it is set at 115 volts. The black lettering, with the numbers 115V, is visible when the switch is in this setting.

STEP 3: Use a screwdriver to flip the switch to the 230-volt setting. Place the screwdriver above the ridge that divides the switch in half. Then push the screwdriver against the ridge and toward the 115-volt lettering. (Refer to Figure H-2.) You should now see 230V in white lettering.

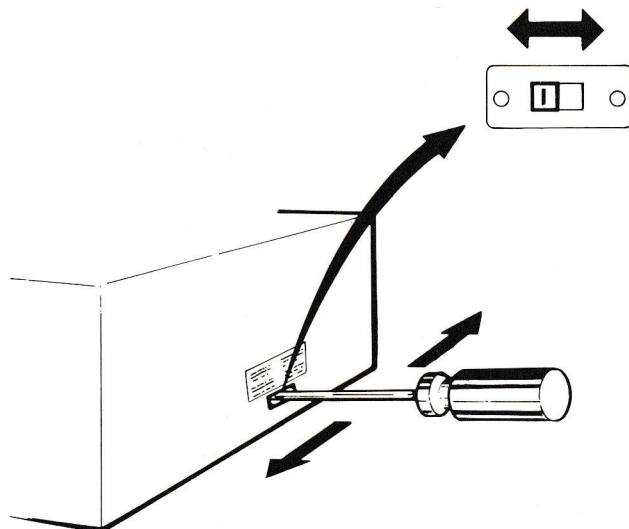


Figure H-2. Changing the Voltage Selector Switch Setting

STEP 4: Replace the chassis in the electronics unit cover by following the steps described in Section 9.2.7.

At this point, it is safe to connect your system and begin to operate it. If you have never connected the Wang Professional Computer before, you should turn to Section 2.4. If you have previously connected your system, you can review the system connections by reading Section 9.2.8.

APPENDIX I WANG PC DEVICE DRIVERS

I.1 GENERALIZED TABLE-DRIVEN PRINTER DRIVER

The generalized table-driven printer driver is included as part of the system software. The generalized printer driver supports any ASCII printer provided that the printer supports the items listed below. Refer to your printer manual to determine if your printer operates according to the specifications listed below.

- It must support a Centronics type parallel or serial RS232C hardware interface
- If your printer is a serial printer, it must support DC1/DC3(XON/XOFF) protocol
- It must support control codes for line feed (LF), form feed (FF), and carriage return (CR)
- It must have a dip switch which disables automatic line feed
- If your printer is used for word processing, it needs a 24 lines per inch (lpi) increment for correct printing of the subscript, superscript, and double underscore attributes. The double underscore defaults to a 1/48 inch increment if supported.

To ensure that your printer operates correctly, you must check three items.

1. The file CONFIG.SYS must include the name of the correct printer driver program (PAR1DRV.COM for parallel printers and/or SER1DRV.COM for serial printers).
2. The correct printer function table(s), and, if required, the correct character translate table(s) for your printer must be available within the system software. Wang supplies printer function tables and character translate tables for two Wang printers.
3. The file PRNXLT.COM, which is automatically loaded by both printer driver programs, must specify the correct printer tables.

NOTE:

If you have a Wang PC-DW20 printer, you need to check that DW20DRV.R.COM is the printer driver program specified in CONFIG.SYS and that the files DW20DRV.R.COM and DAISY06 are on System Diskette I. (Copy these files to System Diskette I if necessary.) Use the procedure described below to specify DW20DRV.R.COM as part of CONFIG.SYS. Once you have specified this printer driver program, you do not need to use any of the other printer utilities described in this appendix.

Within CONFIG.SYS, you must specify either one or both of the generalized printer driver programs. The commands you use to specify the printer drivers should appear as the last lines within the CONFIG.SYS file. For parallel printers, you would enter the line

```
DEVICE = /PAR1DRV.R.COM
```

For serial printers, you would enter the line

```
DEVICE = /SER1DRV.R.COM
```

If you have both printers, you would enter both of these commands on separate lines. The procedure for modifying CONFIG.SYS is described below.

The printer function tables include the specifications for each printer, including baud rate, number of data bits, parity, and number of stop bits. The specifications you need for the table are supplied with the printer. Each function table is a file on System Diskette I. Every function table file has the extension ".PDT". Wang has provided the following tables:

- PM010v2.PDT for the Wang PC-PM010 80 cps matrix printer (parallel)
- PM012v2.PDT for the Wang PC-PM012 20 cps daisy printer (serial)

NOTE:

The file names for the printer function tables and the character translate tables (see below) include a version number, which is the v1 or v2 portion of the name. As the printer function and character translate tables are updated, the version number changes. The file names will also change to match the version number. Therefore, the v1 or v2 portion of the file names may change with new releases to v3, v4, and so on.

If you have either of the two printers listed above, you do not have to create a printer function table. Otherwise, you have to create a table using a separate utility, the Printer Function Table Editor, that you can access from the Printer Support selection on the Main System Menu. Refer to Section I.2.1 for a description on how to run this utility.

Installing Wang PC Device Drivers

Character translate tables, if required, are loaded along with the printer function tables. All character translate tables are files that must have the file extension ".CTT". The character translate tables that have been provided by Wang include the following:

- PM010v1.CTT, the table for the PC-PM010 printer
- PM012v2.CTT, the table for the PC-PM012 printer

If you are not using the printers for which there are ".CTT" tables, then you may also have to create a character translate table using a separate utility, the Character Translate Table Editor. You can access this utility from the Printer Support selection on the Main System Menu. Refer to Section I.2.2 for a description of how to run this utility.

Each of the printer driver programs automatically calls on PRNXLT.COM and loads the specific printer tables. For the parallel printer driver, PRNXLT.COM uses by default the printer function table and character translate table for the Wang PC-PM010 printer. For the serial printer driver, PRNXLT.COM uses by default the printer function table and character translate table for the PC-PM012 printer. If you are using these printers, you do not have to modify PRNXLT.COM. If you are using any other printer, then you must modify PRNXLT.COM to load the appropriate tables. To modify PRNXLT.COM, use a special utility, the Printer Index Table Editor, that you can access from the Printer Support selection on the Main System Menu. Refer to Section I.2.3 for a description of how to run this utility.

NOTE:

The PM012v2.PDT function table transmits data between the system and the PC-PM012 daisy printer as follows: 1200 baud rate, 8 data bits, no parity, and 1 stop bit. Of particular importance is the baud rate. Before using your daisy printer, you should check the dip switch to ensure that it is set at 1200. The illustration below shows you how the dip switch selections for position 1, 2, and 8 should be set for 1200 baud. For more information, refer to your printer manual for instructions on how to check and change, if necessary, the printer dip switch.

		ON	OFF		
1200/OPT	8	<input checked="" type="checkbox"/>		110/300	
12	7	<input type="checkbox"/>		11 Page Size	
ON	6	<input type="checkbox"/>		Auto LF	
ON	5	<input type="checkbox"/>		Self Test	
PTR/RDY	4	<input type="checkbox"/>		DC1/DC3	
Parity-ON	3	<input type="checkbox"/>		OFF	
-OFF	2	<input checked="" type="checkbox"/>		EVEN	
110/1200	1	<input checked="" type="checkbox"/>		300/OPT	

To select a particular printer port, use the Printer Redirection utility. On the Printer Support Menu, there are three Print Redirection options, each of which directs the system to a different port:

- Redirect to Console
- Redirect to Parallel Port #1
- Redirect to Serial Port #1

By default, the system is directed at start-up time to the parallel port unless you have specified SER1DRV.R.COM in CONFIG.SYS. If that is the case, the system is directed to the serial port. Therefore, you do not have to run the Redirection utility unless you have both a parallel and serial printer and you have specified both PAR1DRV.R.COM and SER1DRV.R.COM in CONFIG.SYS, and you want to use both printers during one session. At that time, to use the parallel printer for the first time, you would have to run the Redirect to Parallel Port #1 option. If you wanted to use the serial printer after using the parallel printer, you would have to run the Redirect to Serial Port #1 option.

Use the procedure below to edit CONFIG.SYS (Steps 1 through 10) and run the Printer Redirection utilities (Steps 11 through 13). Test your system using Step 14 to ensure that you have correctly completed the necessary steps to use your printer.

STEP 1: Insert System Diskette I in Drive A. Start up your system.

STEP 2: If you have not done so already, make a backup copy of System Diskette I using the DISK COPY utility, available from the System Utilities Menu. Refer to Section 3.5 for instructions on how to use the DISK COPY utility.

STEP 3: Return to the Main System Menu. Select the Program Development option.

STEP 4: Replace System Diskette I with System Diskette II when the system prompts you (in next step).

STEP 5: Select the Editor option from the Program Development Menu.

STEP 6: If you have a dual-diskette drive system, type A:CONFIG.SYS on the line provided for the file name. If you have a single-diskette drive system, you also enter A:CONFIG.SYS, but you must also replace System Diskette II with System Diskette I. Press EXEC.

STEP 7: Use the South cursor key to move the highlighted line to the last line of the CONFIG.SYS file, which is SHELL = /MENU DRV.R.COM -N001 -P/BIN. Press EXEC to create a blank line below this line and to move the cursor to the beginning of the blank line.

STEP 8: If you are using just a parallel printer, enter DEVICE = /PAR1DRV.R.COM. If you are using just a serial printer, enter DEVICE = /SER1DRV.R.COM. If you are using both printers, enter both commands on separate lines.

NOTE:

If you are using your system for word processing, and it is not an expanded system (i.e., it does not have more than 128KB of memory) then you can specify only one printer driver program in CONFIG.SYS.

STEP 9: Press SHIFT + CANCEL simultaneously to tell the system that you have finished editing CONFIG.SYS. Press EXEC to save your changes. The system automatically returns to the Program Development Menu.

STEP 10: Restart your system. The system automatically loads the printer driver program(s) you specified in CONFIG.SYS and displays on the screen which program(s) is being loaded.

STEP 11: Make a backup copy of the new CONFIG.SYS file.

STEP 12: If you are using two printers, you may have to run the Printer Redirection utility from time to time. Select the Printer Support selection from the Main System Menu. Press EXEC.

STEP 13: The Printer Support Menu, represented in Figure I-1 appears.

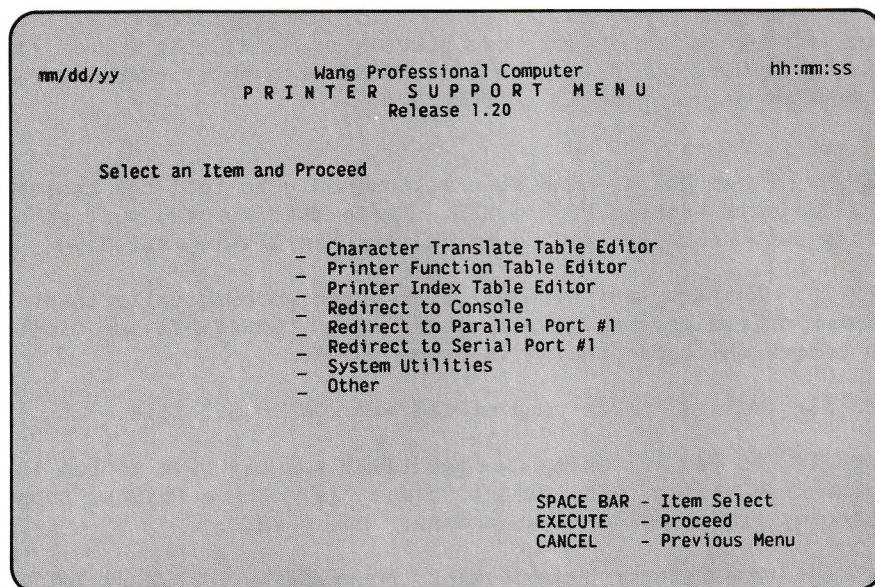


Figure I-1. Printer Support Menu

Select Redirect to Parallel Port #1 to direct the printer path to the parallel port for use with parallel printers; press EXEC. The message "Redirection Complete" appears on the screen after the system runs the redirection program.

Select Redirect to Serial Port #1 to direct the path to the serial port for use with the serial printers; press EXEC. The message "Redirection Complete" appears on the screen after the system runs the redirection program.

STEP 14: To see if your printer is working correctly, use the Word Processing application (if available) to create the test document listed on the next page. Select the Applications option from the Main System Menu and press EXEC. Insert the Word Processing software diskette in Drive A. Select Word Processing from the Applications Menu and press EXEC. Enter the test document exactly as it appears in this manual and then print it (refer to The Wang Professional Computer Word Processing Reference Guide). Compare the printout to the test document in this manual. If it is different, check your word processing document to ensure you did not make an error while creating it. If there were no errors in your document, then you may have made a mistake in modifying CONFIG.SYS, creating a ".PDT" or ".CTT" table, or running the Printer Redirection utility. Review Steps 1 through 13, correct any errors, and try to print the test document again.

Test document:

```

no attributes

printsuperscript

printsubscript

line underscored

line double underscored

print bold

printsuperunderdoublebolddoublebase

printsubunderdoublebolddoublebase

print underboldboldunder

print doubleboldbolddouble

printccccccccccccccccccbase

```

NOTE:

Some matrix printers do not print underscoring as a continuous line, but as a separate line under each character.

Transparent Mode

The Generalized Printer Driver can be put into a transparent mode of operation where all input data are passed directly through the driver and output to the peripheral device. Transparent mode is supported in three ways: the driver defaults to transparent mode when it is loaded; transparent mode is set by running the Transparent Mode utility; and transparent mode is enabled and disabled dynamically by a user-created applications program.

To have transparent mode selected as the default, complete the procedure described below.

Step 1: Select Printer Support from the Main System Menu.

Step 2: Select Printer Function Table Editor from the Printer Support Menu.

Step 3: Select Prefill Function Tables from the Printer Function Table Editor Menu and load the printer function table for your printer.

Step 4: After you have loaded the printer function table, return to the Printer Function Table Editor and select Supported Functions. From the Supported Functions Menu, select Transparent Mode. Press EXEC until the Printer Driver Editor menu appears.

Step 5: Select Write to Disk from the Printer Function Table Editor Menu to save the printer function table that now designates the default transparent mode.

To use the Transparent Mode utility which is located on System Diskette I, use the procedure described below. Transparent mode is frequently required for use with a particular application. It is sometimes necessary to enter transparent mode to print items such as graphics which the generalized printer drivers do not support. When you run an application that requires transparent mode, first enter transparent mode, run the application, then exit transparent mode. The printer driver is then available for use by other applications.

The best procedure for accessing the Transparent Mode utility is to create and execute a batch command file to enter or exit transparent mode. The file must contain the line PRNMODE.COM 1 to enter transparent mode, and the line PRNMODE.COM 0 to exit transparent mode. Note that the batch command file and the file COMMAND.COM must reside on the same disk as the utility and batch file. Refer to The Wang Professional Computer Utility Programs User Guide for information on how to use the DOS Command Processor and how to create batch command files.

You can also add entries for entering and exiting Transparent Mode to the Applications Menu. To do this, you must modify the Applications Menu data file APPMENU.DAT by using the MODIFY SYSTEM MENUS utility. The procedure listed below describes how to modify the Applications Menu assuming that your

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system has two diskette drives. Refer to The Wang Professional Computer Utility Programs User Guide for information on how to run the MODIFY SYSTEM MENUS utility on systems with one diskette drive or with one diskette drive and a Winchester drive.

1. Select the MODIFY SYSTEM MENUS utility from the System Utilities Menu.
2. When the initial utility screen appears, position the acceptance block next to the Edit Existing Menu option. Enter APPMENU.DAT in the Menu File Id field. Enter the letter A in the On Drive field. Press EXEC twice.
3. Add an entry to the Applications Menu for entering Transparent mode. To do this, press RETURN to move the acceptance block to the function selections. Select the Add New Entry option and press EXEC. Enter the line

Enter Transparent Mode

in the menu display. Press RETURN to move the cursor to the lower portion of the screen. Enter the following responses to the prompts:

File Name: PRNMODE
File Extension: COM
Parameters: 1
Module type: (position acceptance block next to Program)

Press EXEC after you enter these responses.

4. Add an entry to the Applications Menu for exiting Transparent mode. To do this, press RETURN to move the acceptance block to the function selections. Select the Add New Entry option and press EXEC. Enter the line

Exit Transparent Mode

in the menu display. Press RETURN to move the cursor to the lower portion of the screen. Enter the following responses to the prompts:

File Name: PRNMODE
File Extension: COM
Parameters: 0
Module type: (position acceptance block next to Program)

Press EXEC after you enter these responses.

5. Press CANCEL. The following prompt appears on the screen:

```
Press EXECUTE to update the menu definition file
or CANCEL to return to menu without updating file.
WARNING - FAILURE TO UPDATE MAY DAMAGE THE
INTEGRITY BETWEEN THE MENU DEFINITION AND HELP
TEXT FILES.
```

When this message appears, press EXEC. The process of adding these entries to the Applications Menu is then complete.

In order for the Transparent Mode utility to be functional, a printer driver must be installed in the file CONFIG.SYS. If you attempt to turn transparent mode on in a system that does not have a printer driver installed, the message "Function was not completed" appears on the screen, and the system returns to the Applications Menu.

Applications programmers should consider the option of selecting transparent mode dynamically. To do so, create an assembly language applications program which executes an interrupt type 21h (function request). Refer to The Wang Professional Computer Program Development Guide and The Wang Professional Computer Assembly Language Reference Manual for information on how to write, assemble, link, and store an assembly language applications program. Prior to executing the interrupt type 21h, the registers must be set as follows:

```
AH      44h (function number)
AL      03h (subfunction code)
BX      04h (file handle)
CX      01h (count)
DS:DX   buffer address of the transparent mode command byte:
          FCh  enter transparent mode
          FBh  exit transparent mode
```

I.2 USING THE PRINTER SUPPORT EDITORS

The Printer Support Editors modify the system software to operate with your printer. The Printer Support Editors consist of three utilities.

- Printer Function Table Editor -- This utility allows you to create new printer function tables that contain the hardware interface functions and escape codes for your printer. For printer tables that support a serial driver, you can also specify parameters such as baud rate, parity, data bits, and number of stop bits.
- Character Translate Table Editor -- This utility allows you to create new character translate tables which relocate PC WISCII character positions to the font position in which they are found for your printer's font table. This utility also lets you specify single and double overstrike characters as well as ESC (escape) code characters and SO (shift out)/SI (shift in) character access.

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- Printer Index Table Editor -- This utility modifies PRNXLT.COM, which contains the file names of the printer tables and the character translate tables. This file can also specify that the system automatically load a character translate table during start-up. When the system starts, the printer driver programs (PAR1DRV.R.COM and SER1DRV.R.COM) load PRNXLT.COM and the printer tables and character translates tables specified within PRNXLT.COM.

The sections below provide step-by-step procedures for using these three utilities.

I.2.1 The Printer Function Table Editor

The Printer Function Table Editor utility allows you to edit an existing printer function table or to create a new printer function table if you are not using one of the Wang-supported printers. With this utility, you can specify the hardware interface functions and escape codes for your printer table. You then save this printer table on System Diskette I and enter the name of this table in PRNXLT.COM using the Printer Index Table Editor utility described in Section I.2.3.

To access this utility, select the Printer Function Table Editor option from the Printer Support Menu shown in Figure I-1. The Printer Function Table Menu in Figure I-2 appears.

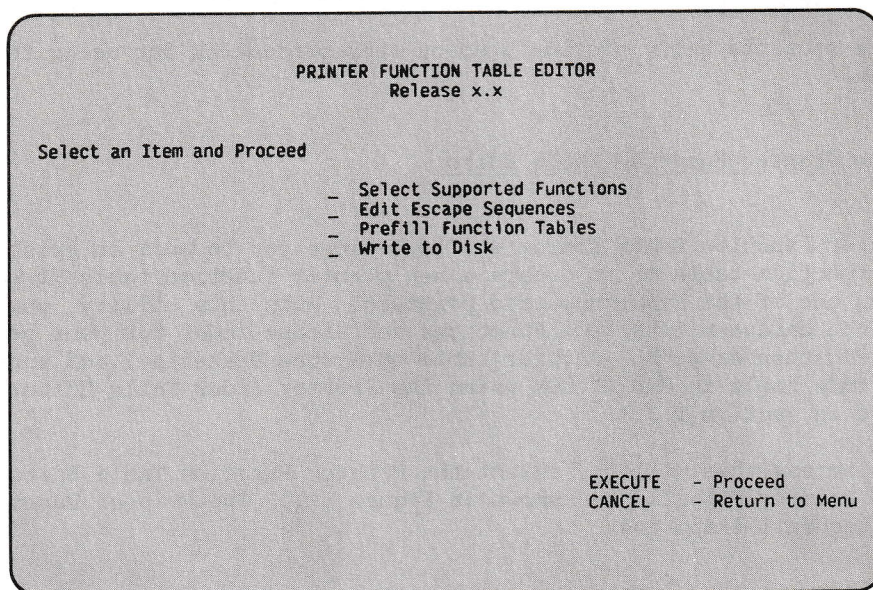


Figure I-2. The Printer Function Table Menu

The process of editing or creating a printer table consists of the following steps, which are described in more detail below:

- Prefill an existing printer table. This step is not necessary if you are creating a new printer table.
- Enter the hardware interface functions your printer supports.
- Enter the escape sequences for your printer (not required if your printer supports the Transparent Mode function).
- Save the printer table file on System Diskette I.

Prefilling an Existing Table

To edit an existing printer function table, select the Prefill option from the Printer Function Table Editor Menu. If you are creating a new printer table, skip this section and proceed to the section on Entering Hardware Interface

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Functions or Editing Escape Sequences. When you select Prefill, the prompt "Enter name of file to edit" appears underneath the menu. Enter the name of the printer table file you want to edit and press EXEC. This file name must have the printer table file name extension .PDT. If you enter a file name that does not have this extension and press EXEC, the message "Invalid data: Suffix .PDT required" appears at the bottom of the screen. Reenter the file name with a .PDT extension and press EXEC. If you misspell the file name or enter a nonexistent file name, the message "File Not Found" appears at the bottom of the screen. You must then reenter a correct file name.

After you press EXEC, the file name prompt disappears. While the utility is prefilling the printer table, the message "Reading from disk" appears in the lower left corner of the screen. When prefill is complete, the message "Task Complete" appears. Press CANCEL to return to the Printer Support Menu.

Entering Hardware Interface Functions

To edit the hardware interface functions in a printer table, first select the Supported Functions option from the Printer Function Table Menu. A screen similar to the one shown in Figure I-3 appears.

```

                                PRINTER FUNCTION TABLE EDITOR
                                Select Supported Functions

Does this printer table support a serial printer driver? (Yes/No) N

Select Supported Functions
- 80 Character Per Line          - Proportional Spacing
- Audible Tone                  - Power-on Communications Test
- Transparent Mode              - Set Form Length
- Reset Printer                 - Set Line Feed Spacing
- Set Horizontal Spacing        - Printer Deselect &
                                Idle Status Request

                                EXECUTE - Proceed
                                CANCEL  - Return to Menu
  
```

Figure I-3. Supported Functions Screen

The first prompt in the display asks if the printer table you are creating supports a serial printer driver. Enter a Y or an N in the field and press RETURN or BACK TAB to move the cursor to the list of functions. If you enter an invalid character and attempt to leave the field, the utility keeps the cursor in that field and displays the message "Invalid data: Y or N required." You must then enter a Y or an N before moving to the next field.

From the list of functions, specify those that your printer supports. To select a function, use the space bar and BACKSPACE keys to move the cursor next to the function and press INSERT. The utility indicates that you have selected a function by placing an acceptance block next to that function. The utility then moves to the next function in the list.

The utility has no way to verify that you are entering the correct information about your printer. In particular, there are several items that you must check in detail to ensure that they are supported by the Wang PC. These items and their requirements are listed below (other items in Supported Functions do not have such exact requirements as those listed below). You must enter these printer functions exactly as listed below. If these functions are not supported in the exact manner described below, then your printer cannot be used with the PC. Consult your printer reference manual if you are not sure which functions in the list apply to your printer.

Function

Requirements

Printer Deselect and
Idle Status Request
(serial printers only)

The escape sequence for the idle status must be defined by three bytes. The status byte returned by the printer must be preceded by STX(02h). The idle status bit must be represented as 1=idle and 0=busy.

The deselect function must be preceded by DC3(13h). The printer must return an XOFF upon receiving the deselect sequence.

Reset Printer
(serial printers only)

If the printer supports an XON after reset, the reset function must be followed by DC1(11h).

Proportional Spacing

Backspace, Perform Negative Line Feed, Perform Half Line Feed, and Perform Negative Half Line Feed functions are supported by Proportional Spacing only. Horizontal tab stops are not supported.

Horizontal Tab Stops	Supported at every eighth character position (not supported in Proportional Spacing). Vertical tabs are not supported.
Left Margins	Supported for half- and full-inch intervals.
Attributes	The generalized printer driver programs support the attributes superscript, subscript, bold, underline, and double underline. Even if your printer supports these attributes, do not include the escape sequences in the printer function table. The printer driver programs handle them automatically.
Terminator Hex Code FE	Cannot be used in any escape sequence.

If you want to deselect a function, position the cursor next to the function you want to deselect and press DELETE. The utility indicates that you have deselected the function by removing the acceptance block that appeared next to that function. The utility then moves to the next function in the list.

To move the cursor from the list of functions to the initial prompt in the display, press BACK TAB or RETURN. If you press BACK TAB or RETURN again, the utility returns to the function you last edited.

If you do not want to save the changes you have made to this screen, press CANCEL. The utility disregards all changes you have made and returns to the Printer Function Table Menu.

When you finish selecting the functions on the first screen that apply to your printer, press EXEC. If the printer table you are editing or creating does not support a serial printer driver (that is, if you entered an N in response to the first prompt in the screen), the utility saves your changes and returns to the Printer Function Table Menu. If the printer table you are editing or creating supports a serial printer driver (that is, if you entered a Y in response to the first prompt in the screen), another screen appears. (Refer to Figure I-4.)

PRINTER FUNCTION TABLE EDITOR
Select Supported Functions

Select Baud Rate:	<input type="checkbox"/> 50	<input type="checkbox"/> 150	<input type="checkbox"/> 1200	<input type="checkbox"/> 4800	<input type="checkbox"/> 19.2 k
	<input type="checkbox"/> 75	<input type="checkbox"/> 200	<input type="checkbox"/> 1800	<input type="checkbox"/> 7200	<input type="checkbox"/> 56 k
	<input type="checkbox"/> 100	<input type="checkbox"/> 300	<input type="checkbox"/> 2400	<input type="checkbox"/> 9600	<input type="checkbox"/> 1.344m
	<input type="checkbox"/> 110	<input type="checkbox"/> 600	<input type="checkbox"/> 3600	<input type="checkbox"/> 16 k	<input type="checkbox"/> 1.544m
	<input type="checkbox"/> 134.5				

Select Parity:	<input type="checkbox"/> No Parity	Select Stop Bits:	<input type="checkbox"/> 1.0 Stop Bits
	<input type="checkbox"/> Odd Parity		<input type="checkbox"/> 1.5 Stop Bits
	<input type="checkbox"/> Even Parity		<input type="checkbox"/> 2.0 Stop Bits

Select Data Bits:	<input type="checkbox"/> 5 Data Bits
	<input type="checkbox"/> 6 Data Bits
	<input type="checkbox"/> 7 Data Bits
	<input type="checkbox"/> 8 Data Bits
	<input type="checkbox"/> 9 Data Bits

EXECUTE	- Proceed
CANCEL	- Previous Screen

Figure I-4. Serial Printer Supported Functions Screen

This screen contains sections in which you specify the baud rate, parity, number of data bits, and number of stop bits for your printer. (Refer to your printer reference manual or The Wang Professional Computer Asynchronous Communications Guide for an explanation of these items.) To select an option from a section of this table, use the space bar and BACKSPACE keys to move the cursor next to the option you want. The utility indicates the options currently selected in each section by highlighting them; these options also have an acceptance block next to them. To move the cursor to another section of the screen, press RETURN or BACK TAB.

NOTE:

Although your printer may support a number of serial options, the Wang PC hardware may not. Check The Wang Professional Computer Technical Reference Manual for a full description of each hardware component to determine specifically how your printer can be supported by the Wang PC.

To select an item different from the highlighted item, use the space bar to move the cursor to the correct item. Then press RETURN or BACK TAB to advance to the next section. After you select the items in each section that apply to your printer, press EXEC to indicate that you want the utility to save your changes. The utility does so and returns you to the Printer Function Table Editor Menu. If you press CANCEL while in the Supported Functions screen #2, the utility disregards any changes you made in this screen and returns to the first Supported Functions screen. The first screen, however, reflects any changes you made to it before you entered the second screen. If you press SHIFT + CANCEL while in the second Supported Functions screen, the utility cancels all changes you made in both screens and returns to the Printer Function Table Editor screen.

Editing Escape Sequences

After you edit the hardware interface functions for your printer with the Supported Functions screen, the next step is to edit the escape sequences. To do this, select the Escape Sequences option from the Printer Function Table Editor Menu. When you select this option, a screen similar to the one shown in Figure I-5 appears.

PRINTER FUNCTION TABLE EDITOR
Edit Escape Sequences

Enter Escape Codes for Functions:

Audible Tone _____	Status Request _____
Reset Printer _____	Deselect Printer _____
Backspace _____	Half Line Feed _____
Neg. Line Feed _____	Neg. Half Line Feed _____
Set Form Length _____	
Set Line Feed Spacing _____	
Set Horizontal Spacing _____	

EXECUTE - Proceed
 CANCEL - Return to Menu

Figure I-5. Escape Sequences Screen #1

NOTE:

If you selected the Transparent Mode option when you edited the printer functions in the previous step, the Escape Sequences option is not functional. If you select the Transparent Mode option and then attempt to access the Escape Sequences option, the message "Transparent mode: Escape sequences not needed" appears in the lower left corner of the screen. If this is the case, skip this section and proceed directly to the Write to Disk option, as described in the next section.

The prompts in this screen contain either a blank in which you enter the escape code for the corresponding function on your printer or the word UNAVAILABLE. This word appears if you indicated that this function does not apply to your printer while you were in the first Supported Functions screen. For example, if you did not select the Reset Printer option in the first Supported Functions screen, the word UNAVAILABLE appears next to the Reset Printer line on the first Escape Sequences screen.

When this screen appears, enter the escape code hex values for each function your printer supports. Press the RETURN key or BACK TAB key to move the cursor to the next or previous field in the display. After you enter the escape codes for the first screen, press EXEC to go to the second Escape Sequences screen, shown in Figure I-6.

PRINTER FUNCTION TABLE EDITOR
 Edit Escape Sequences

Enter Hex Codes for Form Length:

11 inch	12 inch	
14 inch	15 inch	

Enter Hex Codes for Line Feed Size:

48 lpi	24 lpi	12 lpi
8 lpi	6 lpi	4 lpi
3 lpi	2 lpi	

EXECUTE - Proceed
 CANCEL - Previous Screen

Figure I-6. Escape Sequences Screen #2

NOTE:

While the utility verifies that your entries contain only hex characters (the message "Invalid data: must be hex values" appears if they do not), it cannot verify that the escape codes are correct for the functions on your printer. Consult your printer reference manual if you are not sure of the correct hex code for a given printer function.

The Escape Sequences screen #2 contains fields in which you enter the hex codes for your printer that represent the Form Length and Line Feed Size options shown in the screen display. If you indicated in the first Supported Functions screen that your printer did not support the functions of Set Form Length or Set Line Feed Spacing, the fields for the corresponding sections of the second Escape Sequences screen contain the word UNAVAILABLE. Enter the hex codes in the fields for each option your printer supports, using RETURN and BACK TAB to move the cursor between fields.

If you selected the Printer Deselect and the Idle Status Request in the first Supported Functions screen, the bottom of the second Escape Sequences screen includes a section in which you specify the idle bit position that corresponds to your printer. (The idle bit position prompt does not appear if you did not select this option.) Use the space bar and BACKSPACE keys to position the cursor and the acceptance block next to the idle bit position that corresponds to your printer. (The utility highlights the currently selected bit position.)

After you enter the data that applies to your printer, press EXEC to proceed to the third Escape Sequences screen shown in Figure I-7.


```

      PRINTER FUNCTION TABLE EDITOR
      Edit Escape Sequences

Enter Hex Codes for the Horizontal Spacing:

_____ 5 cpi      _____ 10 cpi      _____ 12 cpi
_____ 15 cpi     _____ 16.5 cpi

Enter Hex Codes for Proportional Spacing:

_____ Select Proportional Spacing
_____ Deselect Proportional Spacing

EXECUTE - Proceed
CANCEL  - Previous Screen

```

Figure I-7. Escape Sequences Screen #3

This screen contains sections that prompt you to enter your printer's hex codes for five horizontal spacing settings and to enter the hex codes for selecting or deselecting proportional spacing. The fields that follow these prompts are blank if you selected the Set Horizontal Spacing and Proportional Spacing functions on the first Supported Functions screen. If you did not select one or both of these functions, the corresponding fields in the third Escape Sequences screen contain the word UNAVAILABLE.

The procedure for filling in the hex codes in this screen is the same as for the previous two Escape Sequences screens. Use RETURN or BACK TAB to move the cursor between fields, then enter the escape codes that correspond to the functions for your printer. As in the other screens, the utility checks to see that you have entered only hex characters in these fields, but cannot verify that the escape codes you enter are correct for a given function on your printer.

After you enter all the escape codes on all three screens that are applicable for your printer, press EXEC to have the utility save the changes that you have made. The utility then returns to the Printer Function Table Editor Menu. Pressing CANCEL from the first Escape Sequences screen also returns to the Printer Function Table Editor Menu; however, the utility disregards any changes you made to that screen. Pressing CANCEL from the second or third Escape Sequences screen returns to the previous Escape Sequences screen. The utility disregards any changes you made to the screen in which you pressed CANCEL, but the screen you return to still contains any changes you have made. Pressing SHIFT + CANCEL from any screen brings you back to the Printer Function Table Editor Menu and cancels the changes you made to all Escape Sequences screens.

Saving the Printer Table

When you press EXEC to leave the Supported Functions or Escape Sequences screens, the Printer Function Table Editor utility retains any changes you have made in a buffer portion of memory. However, to save these changes on disk, you must select the Write to Disk option from the menu.

After you select the Write to Disk option and press EXEC, a prompt appears that requests you to enter the name you want to give to the printer table file. You must enter a legal Wang PC file name that contains the extension .PDT; the message "Invalid data: Suffix .PDT required" appears if you use an extension other than .PDT. The new printer table file should be on System Diskette I so that it is available when you start the system. Therefore, you should insert System Diskette I in the default drive (if it is not there already) before you execute the Write to Disk option. After you enter the file name, press EXEC. The utility displays the message "Writing to disk" in the lower left corner of the menu as it saves the file. If you enter the name of a file that exists on the disk, the utility displays the message "File already exists: Press EXECUTE or CANCEL." If you want to overwrite the existing file, press EXEC. If you do not want to overwrite the existing file, press CANCEL. When you press CANCEL, the message disappears and the file name prompt remains on the screen.

When you press EXEC, the file name prompt disappears. After the utility saves the file, the message "Task Complete" appears. Press CANCEL to return to the Printer Support Menu. If you press CANCEL from the Printer Function Table Editor Menu before you select the Write to Disk option, the utility returns to the Printer Driver Editor Menu and does not save any changes you made to the printer table file.

After you edit or create a printer table file, you should enter the printer table file name in PRNXLT.COM using the Printer Index Table Editor. This enables the printer driver to load the printer table automatically during start-up. Section I.2.3 provides procedures for using this utility.

I.2.2 The Character Translate Table Editor

The Character Translate Table Editor utility allows you to edit an existing character translate table or to create a new character translate table for both the daisy printer and the matrix printer. With this utility, you can specify the location of PC WISCII character positions in a printer font table. You can also specify single and double overstrike characters. After you save the character translate table on disk, enter the name of this table in PRNXLT.COM, using the Printer Index Table Editor described in Section I.2.3. You can also specify that the system load this table automatically during system start-up.

To access the Character Translate Table Editor utility, select it from the Printer Support Menu. The menu in Figure I-8 appears.

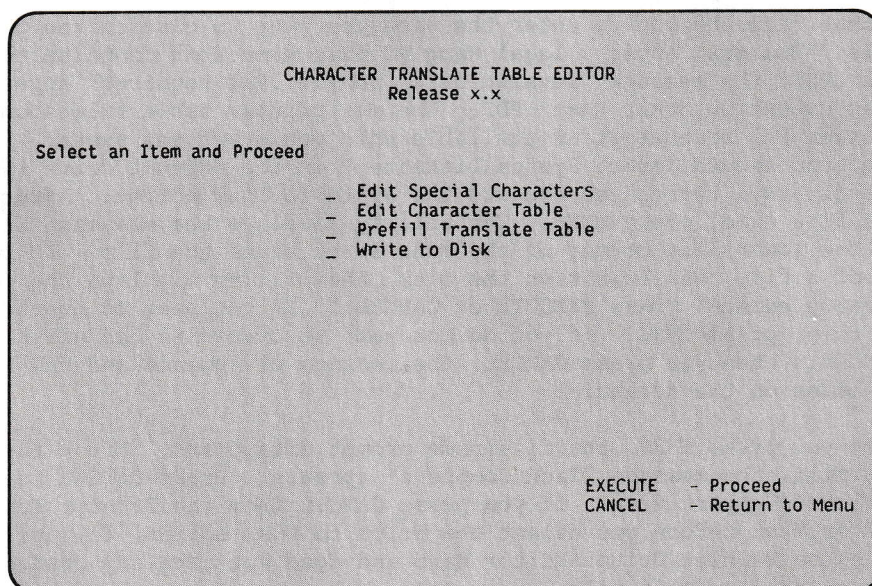


Figure I-8. The Character Translate Table Menu

The process of editing or creating a character translate table consists of the following steps, which are described in detail in later sections:

- Prefill an existing character translate table. This step is not necessary if you are creating a new table
- Specify up to 15 first overstrike characters and 15 second overstrike characters
- Enter the hex codes of the printer characters and their overstrike attributes in the character table
- Enter ESC code characters
- Select Shift Out/Shift In (SO/SI) character access
- Save the character translate table file on disk

Prefilling an Existing Table

To prefill an existing printer table, select the Prefill option from the Character Translate Table Menu. If you are creating a new character translate table, skip this section and proceed to the next section. When you select Prefill, the prompt "Enter name of file to edit" appears underneath the menu. You then enter the name of the character translate table file, for example PM010vl.CTT, you want to edit and press EXEC. This file name must have the character translate table file name extension .CTT. If you enter a file name that does not have this extension and press EXEC, the message "Invalid data: Suffix .CTT required" appears at the bottom of the screen. Reenter the file name and press EXEC. If you misspell the file name or enter a nonexistent file name, the message "File Not Found" appears at the bottom of the screen. You must then reenter a correct file name.

When you press EXEC, the file name prompt disappears. While the utility is prefilling the printer table, the message "Reading from disk" appears in the lower left corner of the screen. When prefill is complete, the message "Task Complete" appears, and the utility returns to the Character Translate Table Menu.

NOTE:

You could create a new table by using this technique and change those items of the existing table that are different. Then, save the modified table under a new name.

Specifying the Overstrike Characters

When you select the Edit Special Characters option from the Character Translate Table Menu, a screen similar to the one shown in Figure I-9 appears.

```

CHARACTER TRANSLATE TABLE EDITOR
Edit Special Characters

Enter the WISCII Values for the Overstrike Characters

1st Overstrikes  1  2  3  4  5  6  7  8  9  A  B  C  D  E  F
                  _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
2nd Overstrikes  _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

Enter the WISCII Values of the Escape(ESC) Code Characters

                  1  2  3  4  5  6  7  8  9  A  B  C  D  E  F
                  _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

Is Shift Out/Shift In Character Access Supported? (Yes/No) N

EXECUTE  - Proceed
CANCEL   - Return to Menu

```

Figure I-9. Overstrike Characters Screen

Overstrike characters are characters that a printer prints over a pre-existing character to form a new character. For example, when a printer overstrikes a vertical bar on an S, it forms a dollar sign. You can specify up to 15 WISCII characters as first overstrike characters and up to 15 characters as second overstrike characters (characters that overstrike a first overstrike character). You specify a character for use as an overstrike character by entering its corresponding hex value in the appropriate field on the screen display. (Refer to Appendix D for a list of hex codes for the entire WISCII character set.)

The RETURN and BACK TAB keys enable you to move the cursor from field to field within the display. If you enter an invalid hex value in a field and attempt to move from that field, the utility displays the message "Invalid data: must be hex values." The utility does not let you move the cursor from that field until you enter a valid hex code.

Installing Wang PC Device Drivers

After you enter your first and second overstrike characters, press EXEC to tell the utility you want to save these entries. The utility then saves this information and returns to the Character Translate Table Menu. If you press CANCEL while in the Overstrike Characters screen, the utility ignores any changes you made to that screen and returns to the Character Translate Table Menu.

Entering the Printer Character Locations

To enter the printer character locations, you specify the hex code that corresponds to the font position on your print wheel for each character in the WISCII character set. Section I.2.4 includes a more detailed description of how to locate the font positions on a print wheel. If your print wheel does not include a given character, you may be able to form this character by specifying one or two overstrike characters.

To begin this process, select the Edit Character Table option from the Character Translate Table Menu. A screen similar to the one shown in Figure I-10 appears.

CHARACTER TRANSLATE TABLE EDITOR
Edit Character Table

	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
1st Overstrike															
2nd Overstrike															
ESC Code Characters															

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Enter Position of Overstrike Characters: 1st 0 2nd 0

SHFTNORTH - Character Field	NORTH - Scroll Down	EXECUTE - Proceed
SHFTSOUTH - Overstrike Field	SOUTH - Scroll Up	CANCEL - Return to Menu

Figure I-10. Character Table Screen

This initial display is one of five such screens that represent the entire WISCII character table. The first screen accommodates characters with hex codes 20 through 4F. The second screen holds characters from hex 50 to 7F. The third screen contains characters from hex 80 to AF. The fourth screen includes characters from hex B0 to DF. The last screen holds characters from hex E0 to FF. You press the South cursor control key to go to the next screen display and the North cursor control key to return to the previous screen display. The top half of each display also lists the first and second overstrike characters you specified in the previous step.

The first digit of a WISCII character's hex code appears at the left of the row. The second digit appears at the top of the column. For example, the upper left field in the initial display represents the WISCII character hex 20. For each field in the screen displays, you enter the hex code of the font position on your print wheel for the corresponding WISCII character.

To specify overstrikes for a character, press SHIFT and the South cursor control key simultaneously after you enter the hex code. This moves the cursor to the first overstrike character prompt. (These prompts appear directly underneath the WISCII character table.) From the overstrike list at the top of the screen, enter the hex value position that corresponds to the character you want to use as a first overstrike. To specify a second overstrike, press RETURN after you enter the first overstrike to move the cursor to the second overstrike prompt. Then, enter the hex value position that corresponds to the character you want to use as a second overstrike. If you do not want a second overstrike character, insert a zero (0) in the second overstrike field if one is not already there. Press SHIFT + North cursor control key to move the cursor from the overstrike field you are in and return to the WISCII character table.

The RETURN and BACK TAB fields move the cursor from field to field in the WISCII character table displays. The utility displays the overstrike character hex values automatically for the character field the cursor is in.

If you enter a character other than a hex value for a field in the WISCII character table display or in response to an overstrike prompt, the message "Invalid data: must be hex values" appears in the lower left corner of the screen. The cursor also remains in the current field; the cursor cannot leave this field until you enter a valid hex value.

After you enter or edit the font position hex codes and overstrike characters for all five sections of the WISCII character table, press EXEC to have the utility accept the changes you have made. The utility then returns to the Character Translate Table Menu. If you press CANCEL at any time while you are in the Character Table screens, the utility returns to the Character Translate Table Menu and disregards any changes you made to the Character Table screens.

Entering Escape Code Character

First, you need to enter into the Edit Special Characters Table the WISCII values of the Escape Code Characters. The location of these entries determines the offset values you use in the Edit Character Table screen (the character you set in the Edit Special Characters Table automatically is displayed under the prompt ESC Code Characters in the Edit Character Table screen under the appropriate offset value). Then, you fill in this offset value into the position within the table that is the WISCII value of the ESC code character.

Selecting SO/SI Character Accesss

If you want to select the SO/SI Character Access, enter Y to the prompt on the Edit Special Characters screen. Then, you modify the ASCII values for each of the SO/SI characters. To modify this value, add 80h (hexadecimal) to the ASCII value of the character. Then, enter this modified value to the position in the Edit Character Table at the appropriate WISCII position.

Saving the Character Translate Table

When you press EXEC to leave the Overstrike Characters or Character Table options, the Character Translate Table utility retains any changes you have made in a buffer portion of memory. To save these changes on disk, you must select the Write to Disk option from the Character Translate Table Menu.

When you select the Write to Disk option and press EXEC, a prompt appears that requests you to enter the name you want to give to the character translate table file. You must enter a legal Wang PC file name that contains the extension .CTT; the message "Invalid data: Suffix .CTT required" appears if you use any other extension. After you enter the file name, press EXEC. When you press EXEC, the file name prompt disappears. The utility displays the message "Writing to disk" in the lower left corner of the menu as it saves the file. To load the new character translate table automatically at start-up time, you should save the .CTT file on System Diskette I. If you enter the name of a file that exists on the disk, the utility displays the message "File already exists: Press EXECUTE or CANCEL." If you want to overwrite the existing file, press EXEC. If you do not want to overwrite the existing file, press CANCEL. When you press CANCEL, the message disappears and the file name prompt remains on the screen.

The character translate table file must contain at least one character. If you attempt to write an empty file to disk, the message "Invalid data: Character table is empty" appears on the screen.

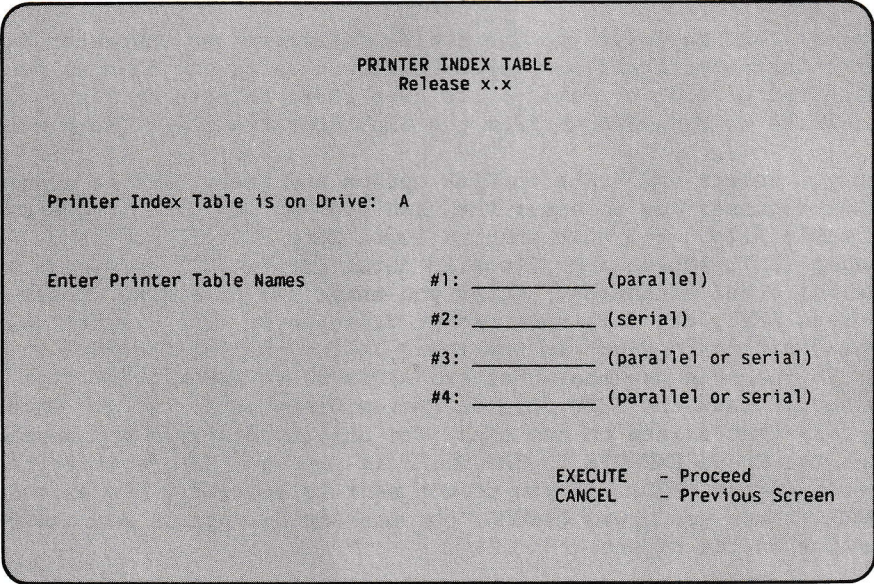
After the utility saves the file, the message "Task Complete" appears. Press CANCEL to return to the Printer Support Menu.

If you press CANCEL from the Character Translate Table Menu before you select the Write to Disk option, the utility returns to the Printer Support Menu and does not save any changes you made to the character translate table file.

After you edit or create a character translate table file, you may want to enter the character translate table file name in PRNXLT.COM. You can also specify that the system load this table automatically during system start-up. Section I.2.3 provides procedures for using the Printer Index Table Editor.

I.2.3 The Printer Index Table Editor

To access the Printer Index Table Editor, select the Printer Support option from the Main System Menu. Remove System Diskette I and insert System Diskette II. Then, select the Printer Index Table Editor option from the Printer Support Menu (refer to Figure I-1). The first Printer Index Table Editor screen appears. (Refer to Figure I-11.)



```
PRINTER INDEX TABLE
Release x.x

Printer Index Table is on Drive: A

Enter Printer Table Names      #1: _____ (parallel)
                                #2: _____ (serial)
                                #3: _____ (parallel or serial)
                                #4: _____ (parallel or serial)

                                EXECUTE - Proceed
                                CANCEL  - Previous Screen
```

Figure I-11. Printer Index Table Editor Screen #1

This screen includes a prompt that requests you to enter the drive that you want the printer index file to reside on. Enter a valid drive letter and press EXEC. Four prompts then appear in the bottom portion of the screen. These prompts contain by default the names of the printer tables that Wang supplies: PM010v2.PDT for the PC-PM010 parallel printer and PM012v2.PDT for the PC-PM012 serial printer.

Installing Wang PC Device Drivers

This screen allows you to enter up to four printer table file names, two of which are reserved for future printer drivers. However, you need only enter the table file name(s) that correspond to your printer table(s). The first table name entry is for tables that support parallel printer drivers, the second is for tables that support serial printer drivers, and the third and fourth are for tables that support either parallel or serial printer drivers.

If you have either of the Wang-supported printers, you do not have to run this utility or modify this screen. If you have developed a printer table for another printer, then you have to enter the table's file name in this screen. If you have a parallel printer, you should enter the new printer table name in field #1, over the default PM010v2.PDT name. If you have a serial printer, then enter the new printer table in field #2 over the default PM012v2.PDT name. You do not have to delete the default printer table names that you are not using.

Entries for printer table file names must meet the requirements for valid Wang PC file names. (Refer to The Wang Professional Computer Utility Program Users Guide for information on Wang PC file names.) In addition, printer table file names must have the extension .PDT. If you enter a file name with an extension other than .PDT for a printer table entry, the message "Invalid data: Suffix .PDT required" appears at the bottom of the screen when you attempt to leave the field. The cursor remains in this field until you delete the file name or enter a file name with a .PDT extension.

After you enter a printer table name, press RETURN to move the cursor to the next field in the table. If you press BACKTAB after you enter a printer table name, the cursor moves to the previous field.

After you enter all the desired items on this screen, press EXEC. The second Printer Index Table Editor screen appears. (Refer to Figure I-12.)

```

      PRINTER INDEX TABLE EDITOR
    Character Translate Table Names

Enter Character Translate Table Names  #1: _____ (parallel)
                                         #2: _____ (serial)
                                         #3: _____ (parallel or serial)
                                         #4: _____ (parallel or serial)

Do you wish to load _____ at boot time? (Yes/No) N
Do you wish to load _____ at boot time? (Yes/No) N
Do you wish to load _____ at boot time? (Yes/No) N
Do you wish to load _____ at boot time? (Yes/No) N

EXECUTE - Proceed
CANCEL  - Previous Screen

```

Figure I-12. Printer Index Table Editor Screen #2

The upper portion of this screen contains by default the names of the character translate tables that Wang supplies: PM010v1.CTT for the PC-PM010 parallel printer and PM012v2.CTT for the PC-PM012 serial printer. The procedure for entering character translate table file names is almost identical to that for entering printer table file names. The only difference is that the required extension for character translate table file names is .CTT. If you enter a file name with an extension other than .CTT for a character translate table entry, the message "Invalid data: Suffix .CTT required" appears at the bottom of the screen when you attempt to leave the field. The cursor remains in this field until you enter a file name with a .CTT extension.

When you enter a new file name for a character translate table and leave that field, the utility replaces the default file name with the new .CTT name in one of the four "Do you wish to load _____ at boot time? (Yes/No)" prompts in the lower portion of this screen. To specify a Yes or No response to this prompt, use the RETURN and BACKTAB keys to move the cursor next to the prompt, and enter a Y or an N. If you enter a invalid character and attempt to leave the field, the utility keeps the cursor in that field and displays the message "Invalid data: Y or N required." You must then enter a Y or an N.

Installing Wang PC Device Drivers

Press EXEC to save the changes you made. The utility saves your updated entries in PRNXLT.COM and returns to the Printer Support Menu. If you want to leave the Printer Index Table screen at any time without saving your changes, press CANCEL. The utility restores the original values and returns to the Printer Support Menu.

I.2.4 How To Determine a Daisy Wheel Layout

The Character Table option of the Character Translate Table Editor utility requires you to enter the hex code for the print wheel font position of each WISCII character. If you are not sure what characters are in font positions 20 through 7F of your print wheel, you can create a small character translate table file that can help you determine this. This procedure consists of the following steps:

STEP 1: Select the Character Translate Table option from the Printer Support Menu. Then select the Character Table option from the Character Translate Table Editor Menu. A screen similar to that shown in Figure I-10 appears.

STEP 2: Enter the hex values from 20 through 2F in the first row. Press RETURN after you enter each value to move the cursor to the next field. Enter the hex values from 30 through 3F in the second row, and from 40 to 4F in the third row. The screen should now look like the one in Figure I-13.

CHARACTER TRANSLATE TABLE EDITOR Edit Character Table																
	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
1st Overstrike																
2nd Overstrike																
ESC Code Characters																
--0--	1--	2--	3--	4--	5--	6--	7--	8--	9--	A--	B--	C--	D--	E--	F--	
2 20	21	22	23	24	25	26	27	28	29	2A	2B	2C	2D	2E	2F	
3 30	31	32	33	34	35	36	37	38	39	3A	3B	3C	3D	3E	3F	
4 40	41	42	43	44	45	46	47	48	49	4A	4B	4C	4D	4E	4F	

Figure I-13. Values for Character Translate Screen

STEP 3: Press the South cursor control key. A second Character Translate screen appears. Enter the hex values from 50 to 5F in the first row, the values from 60 to 6F in the second row, and the values from 70 to 7F in the third row.

STEP 4: Press EXEC to save the values you entered in a buffer and return to the Character Translate Table Menu. Write the file that contains these values to disk. (Refer to the Write to Disk procedures in Section I.2.2.)

STEP 5: Return to the Printer Support Menu. Select the Printer Index Table Editor option. Enter the character translate table file name in the Printer Index Table and specify that you want the system to load this file during start-up. (Refer to Section I.2.3 for Printer Index Table procedures.)

STEP 6: Copy your character translate table file and the files PRNTINDX.EXE, INDEX.MSG, and PRNXLT.COM to System Diskette I using the FILE COPY utility on the System Utilities Menu. Refer to this guide or The Wang Professional Computer Utility Programs User Guide for instructions on how to use this utility.

STEP 7: Restart your system to enable it to load your character translate table file.

STEP 8: After the Main System Menu appears, enter the BASIC interpreter by selecting Basic from the Program Development Menu. Write a short BASIC program (refer to The Wang Professional Computer BASIC Language Guide) that prints the characters from hex 20 through 7F. The BASIC program to use for parallel printers is as follows:

```

5 A = 32
10 FOR I = 1 TO 6
15     FOR J = 1 TO 16
20         LPRINT CHR$(A);
25         A = A + 1
30     NEXT J
35     LPRINT CHR$(10); CHR$(13)
40 NEXT I
45 LPRINT CHR$(12)
50 END

```

The BASIC program for serial printers is as follows:

```

5 REM 1200 baud, no parity, 8 data bits, 1 stop bit
10 OPEN "COM1:1200,n,8,1" AS #1
15 A = 32
20 FOR I = 1 TO 6
25     FOR J = 1 TO 16
30         PRINT#1, CHR$(A);
35         A = A + 1
40     NEXT J
45     PRINT#1, CHR$(10); CHR$(13)
50 NEXT I
55 PRINT#1, CHR$(12)
60 CLOSE#1
65 END

```

STEP 9: Make sure that your printer is connected and on line. Run your program. The six rows of output print a hard copy of characters in font positions 20 through 7F. The first row contains characters in font positions 20 through 2F, the second row contains those in positions 30 through 3F, and so on.

I.3 RAMDISK

RAMDISK is a Wang PC device driver that allows you to designate a portion of main memory for use as a high-speed disk. RAMDISK decreases access time to files that are stored on it. RAMDISK is the file RAMDISK.COM that is part of the system software. Because of the memory space requirements of the system software, RAMDISK is not usable unless your system is an expanded memory system (i.e., it has more than 128KB of memory).

To direct your system to use RAMDISK, you have to modify CONFIG.SYS (see the procedure for editing CONFIG.SYS in Section I.1). Then, each time you start your system, the RAMDISK is automatically loaded. There are two options for specifying the amount of memory you want to set aside for use as RAMDISK:

- specifying a fixed amount of memory
- specifying a percentage of available memory

You enter the line `DEVICE = RAMDISK.COM` as one of the last lines of CONFIG.SYS, followed by either the absolute amount of memory (in KB) or the percentage of memory you want (see below). The minimum amount of space that you can reserve with RAMDISK by either method is 32KB.

Fixed Memory Option

To specify a fixed amount of memory (in KB) as RAMDISK, include the letter F and the number of KB of memory you want at the end of the `DEVICE = RAMDISK.COM` line. For example, if you want a 156KB RAMDISK, the line within CONFIG.SYS should read

```
DEVICE = RAMDISK.COM F156
```

Percentage Memory Option

To designate a percentage of memory as RAMDISK, you specify the amount of memory that you do not want to be used for RAMDISK. This amount remains available for regular use. The amount of memory left over is then multiplied by the percentage you specify. The result of that multiplication is the amount designated as the RAMDISK space.

To the line `DEVICE = RAMDISK.COM`, add the letter R and the amount of reserved memory (in KB) you do not want to use as a RAMDISK, followed by the letter P and the percentage of the remaining memory you want to use as RAMDISK. For example, if you want to reserve 128KB of memory and use 60 percent of the remaining memory as a RAMDISK, add the following line to CONFIG.SYS:

```
DEVICE = RAMDISK.COM R128 P60
```

Installing Wang PC Device Drivers

To specify PERCENT figures that occupy one or more decimal places, enter the PERCENT parameter as (100 * percentage). For example, to specify 70.31%, enter P7031.

The default value for the PERCENT parameter is 70.31%; the default value for the RESERVED parameter is 128KB. If you enter the line DEVICE = RAMDISK.COM without parameters, the system assumes a percentage calculation with the default values for the PERCENT and RESERVED parameters.

Using the RAMDISK

Once the RAMDISK has been established, you can use it as if it were another disk drive. Its drive designation is the next letter in the alphabet after the one the system last used as a drive designation. The only exception is if you have a single-diskette drive system; RAMDISK never uses a "B" drive designation. For example, if you have a single- or dual-drive system, the RAMDISK space would be referenced by "C." If your system has a Winchester drive (Drive C), the RAMDISK space would be "D." If your system has other device drives, then the RAMDISK uses the next available letter.

You work with the RAMDISK space using the same commands and utilities as you would with regular disk drive space. The only exception is that you cannot use DISK COPY with the RAMDISK space. You can copy files to the RAMDISK, execute files on it, erase files from it, and so on. One common use of RAMDISK is for copying frequently used operating files. The system can then load these files from the RAMDISK instead of from a diskette, thereby avoiding the need to change diskettes.

CAUTION:

All files on the RAMDISK are lost when you turn off the system. Therefore, if you want to save the files on RAMDISK, copy them to diskette before turning off the system.

Installing RAMDISK

To install RAMDISK, you modify CONFIG.SYS in a similar way as you would modify it for the generalized table-driven printer driver. Therefore, you can follow Steps 1 through 11 of the procedure for installing the printer driver. (Refer to Section I.1.) However, in Step 8, the line you add is one of the two described above for specifying memory space allocation for RAMDISK. If your CONFIG.SYS file also contains "DEVICE =" statements for the generalized printer driver (or other device driver, when available), your RAMDISK statement could precede or follow the printer driver statements.

After the RAMDISK has been loaded, the system displays the message "RAMDISK v 1.01 nnnnK allocated" to inform you how much space is now available as RAMDISK. If you have allocated too little or too much space, a message indicating the problem is displayed. If such a message appears, you should immediately modify the RAMDISK space specification in CONFIG.SYS.

APPENDIX J CUSTOMIZING THE SYSTEM SOFTWARE

If you use your Wang PC for one or two applications exclusively (Word Processing, for example), you will probably find it inconvenient to remove System Diskette I and insert your application diskette each time you want to use your application, and to remove your application diskette and insert System Diskette I each time you exit the application. You can eliminate this inconvenience by making a copy of System Diskette I, deleting any unnecessary files from the copy, and then copying the application files onto it. This appendix provides a step-by-step explanation of how to perform this process. You should read the entire procedure at least once before you try to perform it.

NOTE:

Make sure that your versions of the operating system and the application are compatible before you begin this process. For example, to run PC Word Processing, Version 1.1, you need a diskette with Version 1.1 of the system software on it.

STEP 1: Make at least two copies of System Diskette I using the DISK COPY utility, as explained in Section 3.5. Remove the original System Diskette I from Drive A. Insert a new copy of System Diskette I in Drive A. Perform all subsequent steps in this process on a new copy. Save the original and any other new copies of System Diskette I in case your first copy is lost or damaged.

STEP 2: Delete any unnecessary files from your first copy of System Diskette I using the FILE DELETE utility. (Refer to The Wang Professional Computer Utility Programs User Guide for instructions on how to use this utility.) Table J-1 shows a list of the files on System Diskette I and the function of each. This table also indicates how essential a particular file is. The letter Y in the "Delete?" column indicates that you can delete the file and not hinder the normal operation of the system. An N indicates that you should not delete the file. An asterisk indicates that you can delete the file if you need more room on your diskette for your application; you should, however, delete all Y files first. When a number appears in the "Delete?" column instead of a Y, N, or asterisk, refer to the comment with that number in the list following the table.

For example, if your Wang PC has a parallel printer and you do not need the following files:

- Help screens
- serial printer files
- the Program Development and Communications menus

you should run the FILE DELETE utility five times -- once with each of the following items as the File ID entry:

.HLP PM012. SER1DRVR.COM PRGDVMEN.* TCMENU.*

STEP 3: Run the DIRECTORY DISPLAY utility for your revised copy of System Diskette I. After the list of files appears on the screen, a message also appears telling you how many bytes are free on the diskette. Record this number.

STEP 4: Run the DIRECTORY DISPLAY utility again for your application diskette. The entry for each file contains the number of bytes that file occupies. Calculate the number of bytes needed for the application files you want to copy onto System Diskette I. (Keep in mind that you may not need to copy all application files; for example, you may not need files such as Help screens and sample documents.) Compare the number of bytes you need to the free space on your copy of System Diskette I. If the application files occupy fewer bytes than the free space on your copy of System Diskette I, you can proceed with Step 5. If not, you must delete more files from your copy of System Diskette I. (These files cannot be files that Table J-1 indicates with an N in the "Delete?" column.)

STEP 5: Insert your copy of System Diskette I in Drive A and your application diskette in Drive B. Return to the System Utilities Menu and select the FILE COPY utility. (Refer to The Wang Professional Computer Utility Programs User Guide for instructions on how to use this utility.) Copy the application files you want to have on your copy of System Diskette I.

For example, to copy the five Multiplan files, make the following entries on the FILE COPY utility screen:

- Input File -- Drive: B; (Volume ID entry not needed); File ID: MP.*
- Output File -- Drive: A; press EXEC to accept default for File ID

If you want to copy Wang PC Word Processing (WP.EXE) and the Word Processing functions (files on the Word Processing diskette with the extension .WPS) to System Diskette I, you must run FILE COPY twice. The first time, use the following entries:

- Input File -- Drive: B; (blank Volume ID); File ID: WP.EXE
- Output File -- (Same as above, except Drive is A.)

The second time, use the following entries:

- Input File -- Drive: B; (blank Volume ID); File ID: *.WPS
- Output File -- (Same as above, except Drive is A.)

Follow a similar procedure to copy the files for other applications onto System Diskette I.

NOTE:

The message "Diskette full" appearing during the copying process indicates that there is not enough room on System Diskette I for the file(s) you want to copy onto it. Return to Step 2 and delete more files from System Diskette I to provide additional space for your application files.

STEP 6: Restart your system as instructed in Section 3.3. Try to access the application with your modified copy of System Diskette I in Drive A. If you are able to access and use your application without changing diskettes, you have performed this procedure correctly.

Table J-1. Files Contained on System Diskette I

File Name	Delete?	Description
BIOS.SYS	N	Basic I/O System
MSDOS.SYS	N	Disk Operating System
CONFIG.SYS	N	Standard Configuration File (for MENU.COM)
CONFIG.SAV	N	Modified Configuration File (for COMMAND.COM)
COMMAND.COM	N	Command Processor
MENU.COM	N	Menu Display Program
MENUDRVR.COM	N	Loader for MENU.COM and Files Called from Menus
UTILITY.MSG	N	System Utilities Messages
MENU.MSG	N	Date and Time Screen and Menu Messages
UTILITY.DAT	N	Utility Menu Data for MENU.COM
MENU.DAT	N	Main Menu Data for MENU.COM
APPMENU.DAT	N	Applications Menu Data for MENU.COM
PRGDVMEN.DAT	Y	Program Development Menu Data for MENU.COM
TCMENU.DAT	Y	Communications Menu Data for MENU.COM
APPMENU.HLP	Y	Applications Menu Help Screens
MENU.HLP	Y	Main Menu Help Screens
TCMENU.HLP	Y	Communications Menu Help Screens
PRGDVMEN.HLP	Y	Program Development Menu Help Screens
UTILITY.HLP	Y	System Utilities Menu Help Screens
RAMDISK.COM	*	RAMDISK
PRNXLT.COM	1	Program that loads printer tables and character translate tables (refer to Appendix I)
SER1DRVR.COM	3	Generalized serial printer driver
PAR1DRVR.COM	2	Generalized parallel printer driver
PM010.CTT	3	Serial printer character translate table
PM012.CTT	2	Parallel printer character translate table
PRINTMNU.DAT	1	Printer Support Menu Data for MENU.COM
RDIR.EXE	1	Print Redirection Utility
EDPDT.EXE	1	Printer Function Table Editor
EDCTT.EXE	1	Character Translate Table Editor
PRINTMNU.HLP	Y	Printer Support Menu Help Screen
CHAR.MSG	1	Character Translate Table Editor Messages
PRTAB.MSG	1	Printer Function Table Editor Messages
ERRSCR.MSG	1	Printer Driver Editor Error Messages
PM010.PDT	3	Serial Printer Function Table
PM012.PDT	2	Parallel Printer Function Table

Table J-1 Comments:

1. This file is necessary only if your system has a printer.
2. This file is necessary only if your system has a parallel printer.
3. This file is necessary only if your system has a serial printer.

APPENDIX K
CONTENTS OF SYSTEM DISKETTES I AND II

The following tables list the files found on System Diskettes I and II and the function of each file.

Table K-1. Files Contained on System Diskette I

File Name	Description
BIOS.SYS	Basic I/O System
MSDOS.SYS	Disk Operating System
CONFIG.SYS	Standard Configuration File (for MENU.COM)
CONFIG.SAV	Modified Configuration File (for COMMAND.COM)
COMMAND.COM	Command Processor
MENU.COM	Menu Display Program
MENUDRVR.COM	Loader for MENU.COM and Files Called from Menus
UTILITY.MSG	System Utilities Messages
MENU.MSG	Date and Time Screen and Menu Messages
UTILITY.DAT	Utility Menu Data for MENU.COM
MENU.DAT	Main Menu Data for MENU.COM
APPMENU.DAT	Applications Menu Data for MENU.COM
PRGDVMEN.DAT	Program Development Menu Data for MENU.COM
TCMENU.DAT	Communications Menu Data for MENU.COM
APPMENU.HLP	Applications Menu Help Screens
MENU.HLP	Main Menu Help Screens
TCMENU.HLP	Communications Menu Help Screens
PRGDVMEN.HLP	Program Development Menu Help Screens
UTILITY.HLP	System Utilities Menu Help Screens
RAMDISK.COM	RAMDISK
SER1DRVR.COM	Generalized serial printer driver
PAR1DRVR.COM	Generalized parallel printer driver
PM010.CTT	Serial printer character translate table
PM012.CTT	Parallel printer character translate table
PRINTMNU.DAT	Printer Support Menu data for MENU.COM
RDIR.EXE	Print Redirection Utility
EDPDT.EXE	Printer Function Table Editor
EDCTT.EXE	Character Translate Table Editor
PRINTMNU.HLP	Printer Support Menu Help Screen
CHAR.MSG	Character Translate Table Editor Messages
PRTAB.MSG	Printer Function Table Editor Messages
ERRSCR.MSG	Printer Driver Editor Error Messages
PM010.PDT	Serial Printer Function Table

Contents of System Diskettes I and II

Table K-1. Files Contained on System Diskette I (continued)

File Name	Description
PM012.PDT PRNXLT.COM	Parallel Printer Function Table Program that loads printer tables and character translate tables (refer to Appendix I)

Table K-2. Files Contained on System Diskette II

File Name	Description
DAISY06	Character Set Table for Daisy Printer
DW20DRVR.COM	DW20 Printer Driver
BASIC.EXE	Interpretive BASIC
PCEDIT.EXE	Wang PC Text Editor
WPCNVDOC.COM	Convert Document to Text File Conversion Aid
WPCONV.COM	Convert Text File to Document Conversion Aid
CONFIG.EDT	Default Parameter Values for Editor
CONVRSRC.WPS	WP Document to Text Conversion Messages
CONVTEXT.WPS	Text to WP Document Conversion Messages
CHKDSK.COM	CHECK DISK Utility
FORMAT.COM	DISK FORMAT Utility
PRINT.COM	Print Spooler Utility
WANGCOPY.EXE	FILE COPY Utility
WANGCOPY.MSG	FILE COPY Utility Messages
WANGCOPY.HLP	FILE COPY Utility Help Screens
WCOMPARE.COM	FILE COMPARE Utility
WCOMPARE.MSG	FILE COMPARE Utility Messages
WCOMPARE.HLP	FILE COMPARE Utility Help Screens
WDSKCOPY.COM	DISK COPY Utility
SSRPORT.COM	RS-232 Communications Port Configuration Program
SSRPORT.MSG	RS-232 Communications Port Configuration Program Messages
SSRPORT.HLP	RS-232 Communications Port Configuration Program Help Screens
MENUICMP.EXE	Menu Editor
MENUICMP.MSG	Menu Editor Messages
INDEX.MSG	Printer Index Table Editor Messages
ERRSCR.MSG	Printer Driver Editor Error Messages
PRNXLT.COM	Program that loads printer tables and character translate tables (refer to Appendix I)
EDPRNXLT.EXE	Printer Index Table Editor

APPENDIX L

PRINTER PORT PIN ASSIGNMENTS

Wang supports both parallel and serial interfaces. Cables for parallel printers should be connected on all 36 pins. Tables L-1 and L-2 list the pin assignments for parallel and serial printers; your printer should meet the specifications listed in these tables.

Table L-1. Parallel Port Pin Assignments

Pin Number (+,-)	Signal	I/O
1,19	/DSTB IN	O
2,20	DATA 1	I/O
3,21	DATA 2	I/O
4,22	DATA 3	I/O
5,23	DATA 4	I/O
6,24	DATA 5	I/O
7,25	DATA 6	I/O
8,26	DATA 7	I/O
9,27	DATA 8	I/O
10,28	/AKNLDG	I
11,29	BUSY	I
31,30	/RESET	O
32,33	/FAULT	I
34,16	/DSTB OUT	O
35,17	/DAV	I
12	PE	I
13	SLCT	I
14	/USRO/AUTO FEED XT	O
15	/POWER ON / OSCXT	I
18	/SMART / 5 V	I
36	USR1	O

Printer Port Pin Assignments

Table L-2. Serial Port Pin Assignments

Signal	I/O	Pin	Description
		7	Signal ground and common return.
TxD	O	2	Transmit Data. Serial data output line from transmitter. Value of one or "mark" is negative and value of zero or "space" is positive. Held in mark condition when transmitter is disabled.
RxD	I	3	Receive Data. Serial data input to receiver. "Mark" is negative and "space" is positive.
/RTS	O	4	Request to Send. When positive, tells the modem that the CPU is ready to transmit data.
/CTS	I	5	Clear to Send. When positive, says that the CPU may begin transmission.
/DSR	I	6	Data Set Ready. When positive, says that the modem has detected the carrier from the remote location. The CPU can now expect to receive data.
/DTR	O	20	Data Terminal Ready. When positive, says that the CPU is operational and ready to communicate with the modem or printer.
/DCD	I	8	Data Carrier Detect. When positive, says that the modem has detected the carrier from the remote location. The CPU can now expect to receive data.

Printer Port Pin Assignments

APPENDIX M GLOSSARY

Abort

To stop the execution of a program.

Acceptance block (■)

On a menu, the graphics symbol that indicates your current selection.

Acoustic coupler

A physical device used in communications between computers. Allows digital signals to be sent and received over telephone lines as analog signals. Acoustic couplers can only be used with switched lines (such as telephone lines), as opposed to modems, which can be used with either switched or leased (private) lines.

Alphanumeric

A set of characters containing both letters and numbers, as well as special characters, such as punctuation marks.

Analog

A type of electronic signal that describes and produces a range of results.

Application program

A program that performs a specific user function, such as Word Processing or Multiplan.

ASCII

A standard code used to represent letters and numbers in 8-bit bytes. Stands for American Standard Code for Information Interchange. The ASCII character set contains 256 characters.

Assembly language

A machine-level language consisting of symbolic statements that correspond more closely with the instruction and data formats of the computer than do high-level languages such as Pascal and COBOL.

Backup procedure

The process of copying data and/or text to another disk or diskette for storage.

Base Unit

The foundation common to all Wang Professional Computer systems, consisting of four components: the keyboard, the electronics unit, the System Diskettes, and the manuals.

BASIC

Beginner's All-Purpose Symbolic Instruction Code: A high-level programming language that can perform a wide range of user applications. Interpretive BASIC is an interactive form of BASIC.

Batch processing

A data processing method in which a program gathers a set of information and processes it collectively.

Baud

A unit used for measuring the speed of data transmission, usually over a communications line.

Bit

The smallest unit of data; a single binary digit having either a positive or negative value. In the Wang PC, eight bits equal one byte.

Block

A group of records operated on as a unit by the computer.

Board

A circuit board.

Buffer

A temporary storage area in main memory.

Bug

A mistake or malfunction within a program.

Burst

To separate continuous form paper into single sheets.

Byte

The amount of space, usually 8 bits, used to store one alphabetic or symbolic character.

Cable

A group of wires bound together and used to connect the system's components.

CANCEL

The key you press when you want to exit from a function or an application.

Card

A circuit board, such as the System card, used within the Wang PC. Memory, communications, Winchester controller, and video cards can be added to the Wang PC.

Glossary

Cathode Ray Tube (CRT)

A video device resembling a television tube but having greater resolution. The CRT displays text as you enter it at the keyboard and as you recall it from storage.

Central Processing Unit (CPU)

The part of a computer that contains circuits that control the interpretation and execution of instructions. In addition, the CPU oversees the use of memory and monitors input/output operations.

Character

A letter, digit, or other symbol used in the representation of data.

Character printer

A machine that prints one solid character at a time, producing letter quality copy.

Character set

A group of characters used by the computer to represent letters, numbers, and punctuation.

Chassis

The part of the electronics unit that houses the disk drives.

Chip

A set of thousands of circuits mounted on a piece of semiconductive material, such as silicon.

COBOL

Common Business-Oriented Language; a high-level programming language designed for business and accounting functions.

Code

Rules for converting and representing data; also, to write a program.

Command

A system-level instruction used to direct an existing program.

Command Processor

System software that allows the user to give instructions to the computer by entering commands, as opposed to interacting with the computer through the use of menu screens.

Communication channel

A medium for carrying data between devices or locations.

Compiler

A device used to translate high-level languages, such as FORTRAN or COBOL, into machine-executable code.

Component

A device, such as a keyboard or a printer, that forms a part of a computer system.

Composite video

One of the two major types of video signals sent to monitors. A single composite video signal contains all of the information necessary to display an image on a screen.

Computer

A machine that can store, retrieve, and process data in accordance with a predetermined program.

Connector

The equipment used to make an electrical connection between two components.

Console

See Monitor.

CONTROL key

A key used in conjunction with other keys to alter their function.

CPS

Characters per second. Used to measure the speed of a printer.

Cursor

A brightly-lit, flashing bar that appears on the screen. Usually indicates the position of your next input.

Daisy wheel

The print element of a daisy wheel printer; a flat disk with characters around its circumference. A daisy wheel can be either 10- or 12-pitch or proportionally spaced in a variety of type styles.

Data

The information that computer instructions operate on.

Debug

To correct mistakes or problems within a program.

Default

A value supplied by the computer when several alternatives are possible but none has been explicitly provided by the user.

Density

The amount of data compressed on a disk. Disks come in single and double densities.

Diagnostic

Software that recognizes, locates, and explains either malfunctions in computer equipment or mistakes in a program.

Digital

Performing operations with data represented electronically as a series of binary numbers.

Glossary

Directory

The part of a disk that contains the names of files on the disk and the number of the sector containing each file's first record.

Directory path

A name of a directory or a series of directories, separated by slashes and optionally preceded by a drive designation, that tells the computer how to access a file in a multilevel structure.

Disk

A flat circular plate with a magnetic surface on which data can be stored. A disk can be a fixed part of the disk drive or, as in the case of diskettes, can be physically removed from the system.

Disk drive

The unit that contains the disk. The disk drive contains a mechanism for controlling the movements of the read/write heads that store and retrieve information on a magnetic disk.

Diskette

A magnetic storage medium, usually smaller and more flexible than a hard disk.

Documentation

Manuals, guides, or other written material designed to help explain the use of computers.

DOS

Disk Operating System.

Drive designation

A parameter preceding the file name and consisting of a single letter that tells the computer what disk drive the file is on.

Editing

Making changes to previously written information in documents, files, programs, etc.

Electronics unit

The central component of the Wang PC system. Storage devices, main memory, and the CPU are located within the electronics unit, and all other components are connected to its back panel.

Erasable Programmable Read Only Memory (EPROM)

The EPROM, contained within the electronics unit of the Wang PC, is composed of two chips that contain various instructions that the computer reads each time it is turned on. These instructions include the power-on diagnostics and the start-up instructions.

Ergonomic

Designed with the concepts of human comfort and ease of use in mind.

ESCAPE

A character code, created by pressing an appropriate set of keystrokes, that performs a special function or action. For example, 2ND + COMMAND and then CANCEL restarts the system.

EXEC

The key you press when you want to run software from a menu, or perform or confirm a function within an application.

Expansion slots

Five multipin connectors located inside the electronics unit of the Wang PC and used for the installation of option cards.

Extension

A set of 1 to 3 characters separated from a file name by a period.

External device

Components connected to, but not part of, the electronics unit that can provide the system with outside communication or additional functionality (e.g, workstations or printers).

External storage

Various media (other than main memory) used for the storage of data. The Wang PC uses diskettes and the Winchester disk as its external storage devices.

Field

The area on the screen where you enter a response to a prompt.

File

A collection of related information treated as a unit (e.g., text file, BASIC program file, BASIC data file, or word processing document).

File Identifier (File ID)

The 1- to 8-character name of the file, optionally preceded by a directory path and optionally followed by an extension.

File name

The expression by which a file is referenced, consisting of up to eight characters and optionally followed by an extension.

File Specification (File Spec)

A file ID with the optional addition of a drive designation as the first parameter.

Firmware

Programs that exist in ROM when you buy a computer.

Floppy disk

See Diskette.

Format

The organization of data on a disk.

Glossary

FORTRAN

FORMula TRANslator: a high-level programming language used primarily in performing mathematical or scientific operations.

Graphics

The symbols, forms, colors, character sets, and commands used to organize screen and text images.

Hard copy

A paper copy, usually produced by a printer, of a screen image or computer file.

Hardware

Physical equipment associated with computers, such as electronics units, printers, monitors, and disk drives.

HELP key

A special key on the keyboard of the Wang Professional Computer that, in most applications, invokes a screen of information about the current procedure.

Immediate mode

A method of using the computer as if it were a calculator.

Index

An ordered list of the contents of a file or a document, together with keys or references for locating the individual entries.

Input

Any information supplied to the computer (e.g., entered through a keyboard or read from a disk).

Input/Output (I/O)

The transfer of information into and out of the system's memory.

Instruction

A command or statement that tells the computer how to perform an operation.

Interactive processing

Data processing in which the computer executes instructions as you enter them from the keyboard.

Interface

A piece of hardware or software used to connect two devices that cannot be directly connected.

Interpreter

Software that scans each line of program text, reads each statement in the line, and then performs the appropriate action or set of actions defined for that statement.

Interpretive BASIC

The interactive programming language supported by the BASIC interpreter.

Keyboard

The set of keys that allows you to enter data into the computer.

Keypad

A group of related keys arranged together on the keyboard.

K (Kilobyte)

A unit of memory equal to 1024 bytes.

Light Emitting Diodes (LEDs)

The set of five indicator lights located on the keyboard under the word processing/special function keys that indicate the status of the power-on diagnostics.

Line printer

A machine that prints text one line at a time, producing draft quality copy.

LIST

A BASIC command that instructs the computer to display a sequence of BASIC statements in a program.

Local Area Network (LAN)

A hardware system with the capability of interconnecting large numbers of computers by cable (e.g. WangNet).

Loop

A set of programming instructions that execute repeatedly.

Main memory

The memory residing in the electronics unit that stores all programs for use by the CPU.

Matrix

A rectangular array of numerical or algebraic quantities.

Matrix printer

A machine that prints characters made up of a series of dots, producing draft copy at very high speeds.

Memory

The Wang PC houses two types of memory: Random Access Memory (RAM) and Erasable Programmable Read Only Memory (EPROM). RAM is the memory available for user programming and applications. "Main memory" and "memory" both refer to RAM. EPROM is the section of memory containing items that cannot be deleted or changed by stored-program instructions because they are wired into the computer.

Menu

A list of options on the screen from which the user makes a selection.

Modem

A device that modulates and demodulates signals transmitted over communication facilities.

Glossary

Monitor

The video device, its casing, and associated circuitry.

Operating system

A collection of programs by which a computer manages itself and its communication with external devices.

Output

The data that the computer produces. Output can be sent to a monitor, printer, disk, or communication port.

Overflow

That portion of the results of an operation that exceeds the capacity of the intended unit of storage.

Parallel communications

The sending of multiple signals simultaneously.

Parameter

A variable to which you assign a value.

Parity bit

A means of internal self-checking to detect erroneous transmission of data. A parity bit, also known as a check bit, can determine if the number of 1 bits in a bit pattern is odd or even.

Pascal

A widely used, high-level, structured computer language known for its versatility.

Port

An access point through which data can enter or leave a data network; a connection point for a communication line on a CPU.

Printer

A device used to produce output on paper. See also Character printer, Matrix printer, and Line printer.

Program

A series of instructions or statements given in a coded form to a computer, designed to produce a specific result.

Prompt

A request for you to supply specific information that enables the computer to proceed to the next operation.

RAM

Random Access Memory. The memory available for user programs and applications.

Read

A process during which the computer accepts information from a disk.

Read-write head

A magnetic mechanism inside the disk drive that puts data onto (writes) or copies data off of (reads) a diskette or disk.

Record

A unit of data consisting of a number of bytes.

Resolution

The degree of fineness of graphic representation, expressed as the number of dots per linear inch or scan lines per screen.

RGB monitor

One of two major types of monitors. Color is displayed when the electron guns generate electron beams that excite the red, green, and blue phosphors covering the screen. Contrast with composite video.

Ribbon cable

A flat cable used to connect devices in a computer system.

RS-232-C

A serial port, most often used to attach a printer to your computer or to establish a communications link between your computer and another computer in a remote location. Also used to attach a modem to a computer.

SAVE

A BASIC command that allows a program in memory to be stored on disk.

Scroll

The movement of information vertically or horizontally on a screen.

Sector

A unit of a disk track consisting of 512 bytes.

Serial

Information that is transmitted one bit or byte after the other.

Software

Computer programs.

Special function (SF) keys

The group of 16 keys located at the top of the keyboard that can be programmed to perform specific tasks within various applications.

Statement

An instruction in programming language which is processed by the compiler and turned into object code (machine language).

String

A sequence of characters in a program command or statement.

System card

The circuit board in the electronics unit of the Wang PC that contains the CPU, RAM, EPROM, and several system connectors.

Glossary

System Diagnostics diskette

The diskette containing software that can recognize, locate, and explain malfunctions in the equipment.

System Diskettes I and II

The diskettes containing the system software, consisting of a collection of programs written to coordinate the operation of all computer circuitry and allow the computer to run efficiently.

System screens

The series of screen displays that appear after you load System Diskette I into the drive.

Telecommunications

The transmission and reception of data over telephone lines. Telecommunications enables a system in one location to send or receive data from a system many miles away.

Terminal

A device consisting of a screen and a keyboard, but no CPU or main memory. Usually used in a time-sharing environment.

Time-sharing

An arrangement that enables two or more users to use the same computer and receive output virtually simultaneously.

Track

One of a number of concentric rings on which data is stored on a disk.

Underflow

An error condition in which the result is less than the smallest number that the computer is capable of processing.

Utility programs

A subsystem of the operating system capable of performing support functions such as formatting disks, backing up files, deleting files from disks, and renaming files.

Variable

A quantity represented by a character that can have any of a given set of values.

Video card

A circuit board that allows various types of video devices to communicate with the System card.

Volume Identifier (Volume ID)

A parameter consisting of a 1- to 11- character alphanumeric. The volume ID serves as a security device that enables the user to verify that the correct disk has been mounted for the entered command.

Volume Label

See Volume Identifier.

Winchester drive

A disk drive that can be installed in the electronics unit of the Wang Professional Computer providing 10MB of storage.

Word processing

An application that permits you to write, edit, copy, and print textual information.

Workstation

The equipment contained in a work area; usually includes a monitor or a keyboard.

Write-protect slot

A notch located on the side of a diskette that provides a way of protecting information. When the slot is uncovered, information can be written onto the diskette. When the slot is covered, no information can be written onto the diskette.

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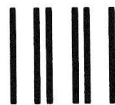
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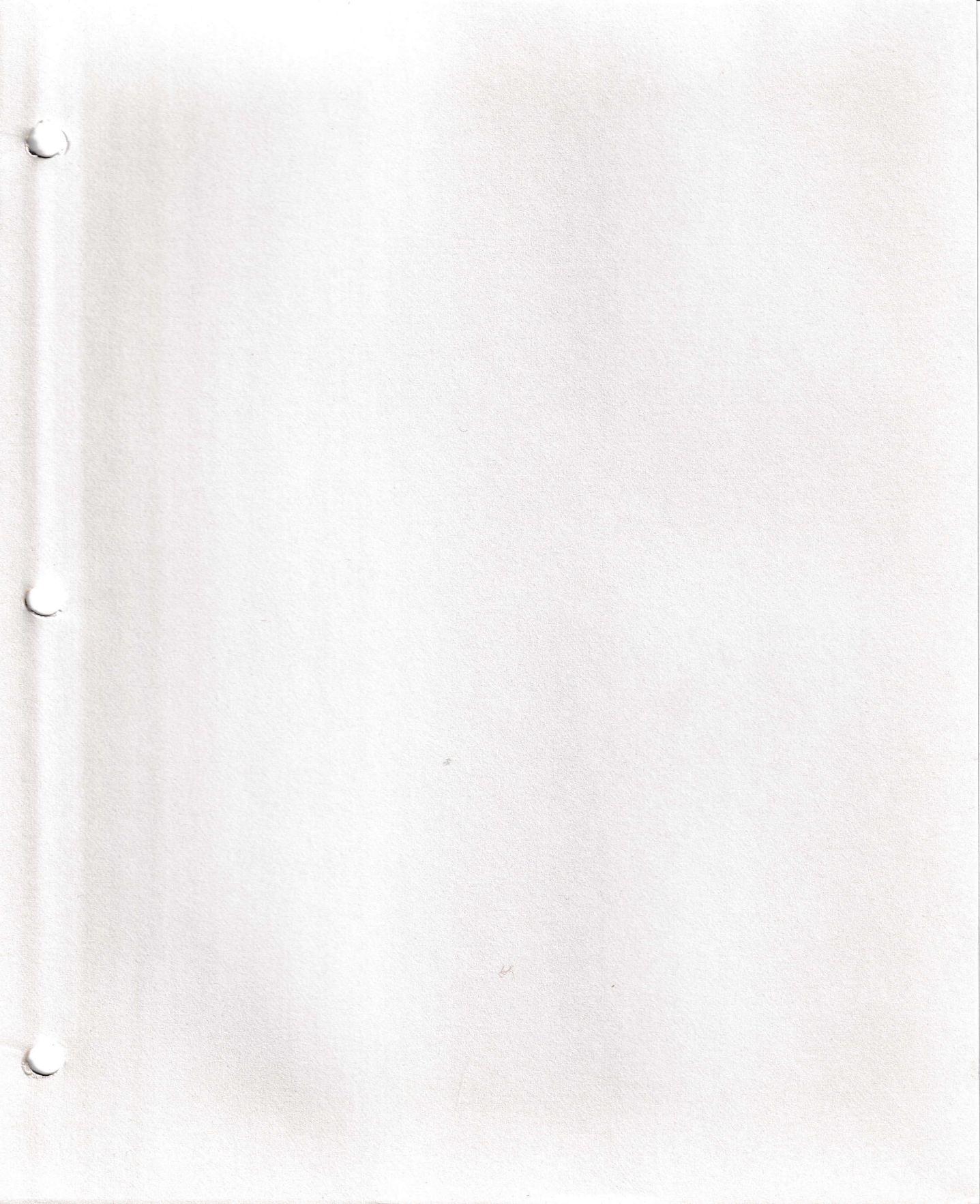
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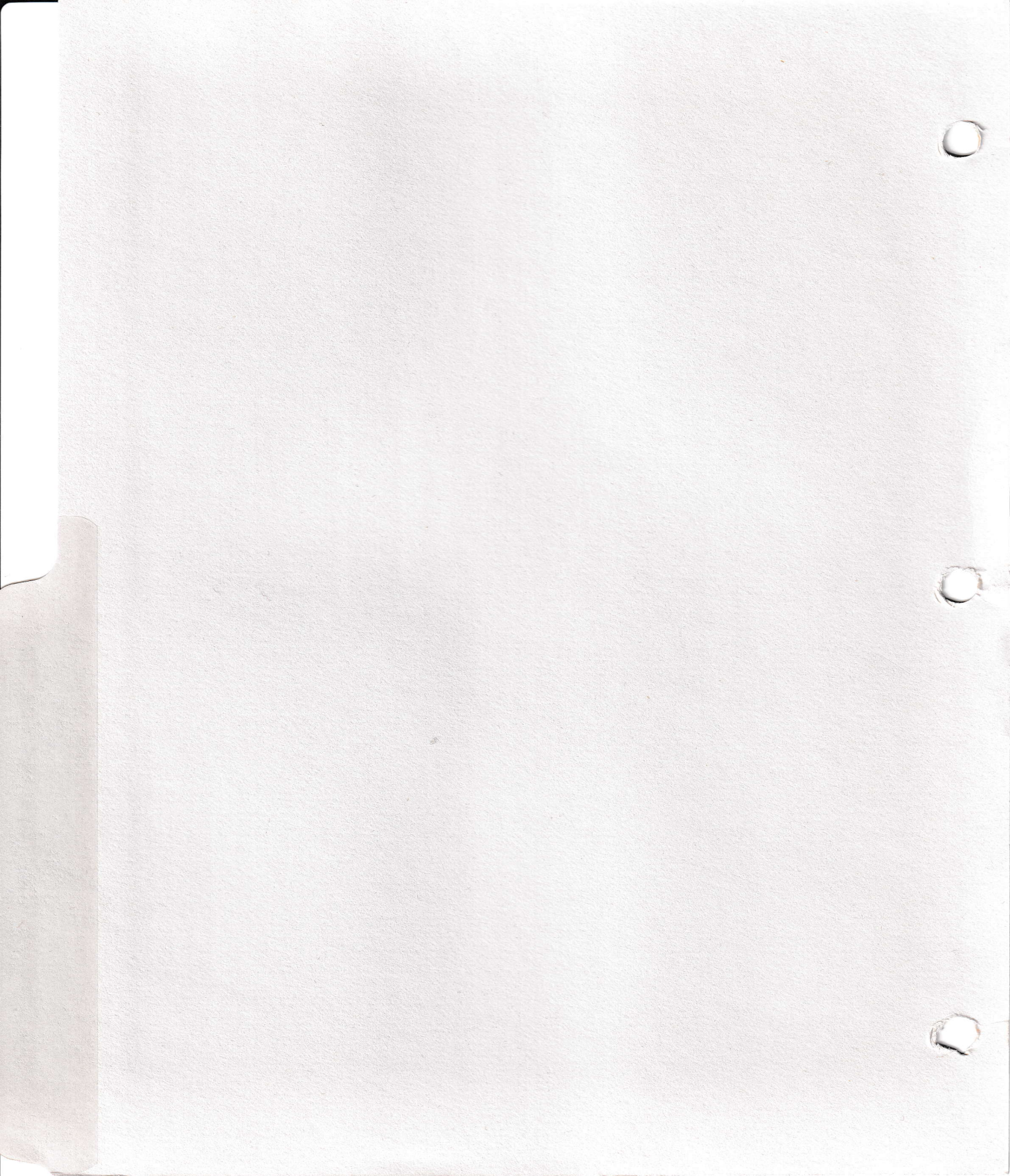
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THE WANG PROFESSIONAL COMPUTER

Utility
Programs
User Guide

WANG

Utility Programs User Guide



The Wang Professional Computer Utility Programs User Guide

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PREFACE

The Wang Professional Computer Utility Programs User Guide explains how to use the utility programs provided with the Wang PC and the Wang PC Editor. Utility programs include both the options on the System Utilities Menu and programs run through the DOS Command Processor. The guide contains a chapter on the input the user supplies in order to handle files with the utilities.

This guide is intended for all users of the Wang PC. To use this guide, you should have read The Wang Professional Computer Introductory Guide (700-8020) or be otherwise familiar with basic computer concepts and terminology.

Chapter 1 File Management: Presents the concepts you need to know in order to name and manipulate files on disk.

Chapter 2 Using the System Utilities Menu: Describes how to use each menu selection on the System Utilities Menu. You can use these utilities to copy, delete, rename, or otherwise manipulate disk files.

Chapter 3 The Editor: Describes the Editor. This utility can create and modify source files for programs in the compiled languages and the Assembler. It can also create and modify text files such as memos, reports, and lists.

Chapter 4 The DOS Command Processor: Explains how to enter commands through the DOS command processor and describes each of the DOS utilities. It also explains batch processing.

The Appendices: List and explain the error messages and codes returned by the utilities and the Editor.

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1

FILE MANAGEMENT

Introduction

Overview of File-Management Parameters

The Drive Designation Parameter

The File Name and Extension Parameters

The Path Name Parameter

The Volume Identifier Parameter

Creating and Modifying Files

Hidden Files

CHAPTER 1 FILE MANAGEMENT

1.1 INTRODUCTION

Almost all of the operations performed on the Wang Professional Computer involve reading from or writing to files on disk. You tell the computer which files to use by supplying parameter values that allow it to locate the files on the disk. This chapter explains file management on the Wang PC by explaining the parameters used to manage files. When you understand the file-management parameters, you have a basic grasp of how Wang PC file management works.

The manuals for Wang PC Multiplan and Wang PC Word Processing, two commonly purchased applications, contain sufficient information on parameters to allow you to start using those programs without reading this chapter. Eventually, however, if you are using Multiplan or Word Processing, you should read at least through Section 1.4. You will need the information contained through Section 1.4 in order to take full advantage of the Wang PC's capabilities.

1.2 OVERVIEW OF FILE-MANAGEMENT PARAMETERS

There are two levels of file management on the Wang PC. The first level is the identification of the file according to four different parameters, described below. The second level makes use of a parameter known as a path name. You should use this level of file management only if your system has a Winchester disk. Section 1.5.2 explains how to use the path name parameter.

Four parameters control I/O on the first level. They are as follows:

- a drive designation
- a file name
- an extension to the file name
- a volume identifier (volume ID)

Drive Designation

A drive designation is a letter of the alphabet designating a disk drive. This parameter tells the computer which drive has the disk that contains the file you wish to access.

File Name

A file name is one to eight characters long. A file name may or may not have an extension, which is one to three characters long and is preceded by a period.

File Extension

An extension allows you to give several files the same file name. For example, you may write several files named RESUME and distinguish them by extensions as in RESUME.#1, RESUME.#2, and so on.

Volume ID

The volume ID is one to eleven characters long and is used to identify the disk that files reside on.

Using File Identifiers and File Specifications

You must often use the file-management parameters in combination with one another. The terms "file identifier" (file ID) and "file specification" (file spec) refer to different combinations of parameters. Understanding these terms is necessary for understanding many of the subsequent explanations of programs in this and other Wang PC manuals.

Many of the file-management programs on the Wang PC System Utilities Menu prompt you for a file ID. A file ID is a file name optionally preceded by a path name and optionally followed by an extension. Thus, if an instruction requires you to supply a file ID, you must at least supply a file name, and sometimes you must also supply a path name and/or an extension. Whether or not you supply the optional parameters depends on two conditions: whether they have been previously specified for the file; and whether the program that is being used requires the optional parameters.

The descriptions of many of the programs supplied with the Wang PC refer to file specifications. A file specification is a file ID with the optional addition of a drive designation as the first parameter. If the file you wish to access is on the default drive, you do not have to supply a drive designation in the file specification. Otherwise, a file specification requires a drive designation. However, you never include a drive designation in a file ID.

The following example illustrates the use of the drive designation, volume ID, file name, and extension parameters in the FILE DELETE system utility.

File Management

Drive Designation

A drive designation is a letter of the alphabet designating a disk drive. This parameter tells the computer which drive has the disk that contains the file you wish to access.

File Name

A file name is one to eight characters long. A file name may or may not have an extension, which is one to three characters long and is preceded by a period.

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The following example illustrates the use of the drive designation, volume ID, file name, and extension parameters in the FILE DELETE system utility.

File Management

SYSTEM UTILITIES - FILE DELETE	
Default Pathname:	A: / _____
File:	
Drive:	A Volume ID: _____
File ID:	TAXES.FDL _____

These parameters instruct the computer to delete a file with the extended file name TAXES.FDL from a disk with the volume ID 1 on Drive A.

NOTE:

In most cases, you can use any combination of uppercase and lowercase letters when entering alphabetic file parameter values. Thus, even where the examples use uppercase letters, you can use lowercase letters, or any combination of the two.

The following sections explain each of the file-management parameters in detail. Section 1.7 discusses the creation and modification of files. Section 1.8 explains the concept of hidden files.

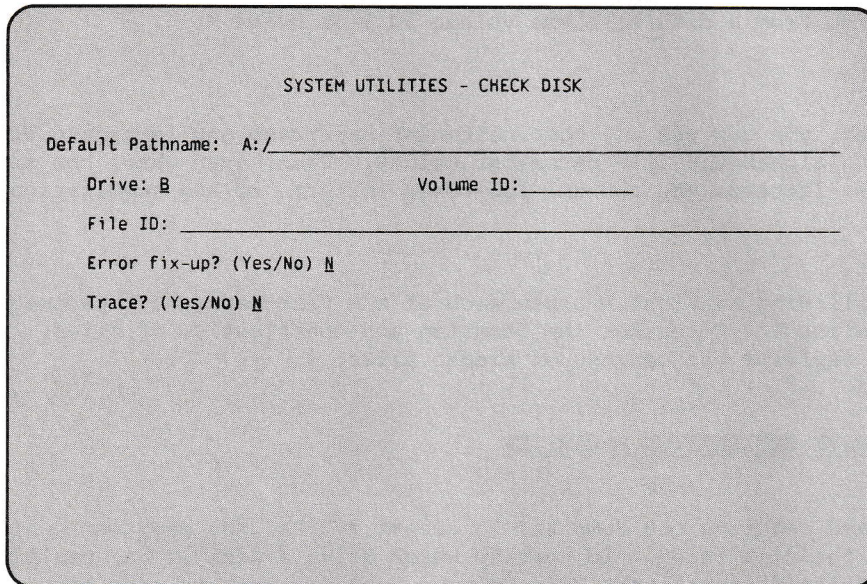
1.3 THE DRIVE DESIGNATION PARAMETER

When a command requires the computer to access a disk, the computer must know which drive the disk is on. To specify which drive a disk is on, you give the computer a drive designation. This is true even for systems with only one disk drive. The discussion that follows first explains how to use drive designations with dual-drive systems. It then explains how to use drive designations on single-drive systems.

A drive designation can be any letter from A to Z. The letters A and B are reserved for the first and second diskette drives, respectively. Other drives purchased for your system will be designated sequentially from C. Currently, the Winchester drive is the only other drive option available. In practice, therefore, C designates the Winchester drive. In the future, however, other drive options may become available.

The RAMDISK utility, although not another physical disk drive, simulates use of memory space as another drive (see The Wang Professional Computer Introductory Guide). When you use RAMDISK, you refer to that space as if it were another drive. All files stored on it include a separate disk drive designation in their file IDs or specifications. If you have a one or two disk drive system, you reference RAMDISK space as Drive C. If you have a Winchester drive, which is by default Drive C, then you would reference RAMDISK space as Drive D. When other disk drive options become available, RAMDISK space would assume the alphabetic letter just after the last one specified.

The following prompt, which appears when you select the CHECK DISK option from the System Utilities Menu, illustrates the use of the drive designation:



SYSTEM UTILITIES - CHECK DISK

Default Pathname: A:/_____

Drive: B Volume ID: _____

File ID: _____

Error fix-up? (Yes/No) N

Trace? (Yes/No) N

The CHECK DISK utility analyzes the contents of the disk in the designated drive. When this prompt appears on the screen, it displays the designation for the default drive, the drive the computer uses if you do not enter a different designation. At start-up, the default drive is the drive from which the computer loaded the system files. In this example, the default drive is A. (For descriptions of ways to change the default drive, refer to Sections 2.3 and 4.2.)

You respond to a drive designation prompt by leaving the default designation unchanged or by typing in a new designation. If you are using the DOS Command Processor or Other option, you enter a drive designation by typing a letter followed immediately by a colon, for example:

B:

The following might be a response to the prompt displayed if you select the DOS Command Processor option from the Main System Menu:

TYPE B:PAYFILE.SAL

This TYPE command instructs the computer to display on the screen the contents of a file on Drive B named PAYFILE.SAL. When using the DOS Command Processor or Other options, you need not supply a drive designation if the file you are accessing is on the default drive.

Note that the default drive is not necessarily the last drive used. In most cases, instructing the computer to use a drive other than the default drive does not change the default drive. When the computer completes executing an instruction on a drive other than the default drive, it resumes using the default drive until you instruct it otherwise.

1.3.1 The Drive Designation Parameter on Single-Drive Systems

Often the instructions you give the computer involve the use of more than one disk. For example, you can instruct the computer to copy a file from one diskette to another. On a single-drive system, you instruct the computer to perform an operation involving more than one diskette just as you do a dual-drive system: by supplying different drive designations for the diskettes. Thus, when the execution of a command requires you to change the diskettes in the drive, you must think of the system as having two diskette drives: Drive A and Drive B.

For example, you can use the FILE COPY option on the System Utilities Menu to copy a file from one diskette to another. While the default drive is A, you could respond to the prompt returned by the FILE COPY option in the following way:

SYSTEM UTILITIES - FILE COPY	
Default Pathname: A:/_____	
Input File:	
Drive: A	Volume ID: _____
File ID: RESUME.#1_____	
Output File:	
Drive: B	Volume ID: _____
File ID: _____	

File Management

These responses instruct the computer to find the file named RESUME.#1 in the diskette in the default drive and make a copy of it on a second diskette. When you press the EXEC key, the following prompt appears: "Insert diskette for Drive B: and strike any key when ready". If the default drive was B, the message would tell you to insert a diskette in Drive A.

When the last drive used is not the default drive, the next command you issue which uses the default drive causes the computer to prompt you to insert a diskette in the default drive. For example, when A is the default drive and B is the drive last used, the next command you issue which uses Drive A causes the computer to return the following prompt: "Insert diskette for Drive A: and strike any key when ready".

1.4 THE FILE NAME AND EXTENSION PARAMETERS

A file name of up to eight characters must be given to every file. You can also give the file name an optional extension of up to three characters. When you create a file, the computer logs each file name and extension in one of the directories on the disk. File names and extensions appearing in a directory must be composed of characters, in any combination, from the following list:

A-Z	0-9	\$	&	#	@	!
%	'	()	-	<	>
\	^	~	_			

Note that the computer reads any other character it finds in a file name or extension as a delimiter terminating the file name. The computer ignores all characters subsequent to a delimiter.

1.4.1 File Name Extensions

Extensions to file names can have a variety of functions, but most often they serve to classify files by specific types. For example, the extension .BAS indicates that a file is written in the BASIC programming language.

Several of the programs available with the Wang PC use specific extensions for predefined purposes. Therefore, you should use care when assigning these extensions to any of your files. The following is a list of predefined extensions, together with the titles of the manuals where they are explained, for some of the most commonly used programs.

Extension	Program	Where Explained
.ASM	Assembler	Program Development Guide
.BAK	Editor	This manual, Chapter 3
.BAS	BASIC	BASIC Language Guide
.BAT	DOS	This manual, Section 4.6
.CHK	Check Disk	This manual, Section 2.3
.COM	DOS	Program Development Guide
.DOC	Word Processing	Word Processing Reference Guide
.EXE	Linker	Program Development Guide
.GL	Word Processing	Word Processing Reference Guide
.HEX	Debugger	Program Development Guide
.LIB	Library Manager	Program Development Guide
.MAP	Linker	Program Development Guide
.OBJ	Linker	Program Development Guide
.SYS	DOS	Introductory Guide
.TMP	Linker	Program Development Guide

CAUTION:

Do not use the extension .BAK for any file. The Editor creates a backup file with that extension every time a file is re-edited. The next time it edits a file, the Editor deletes the previous backup file and creates a new one.

1.4.2 Reserved File Names

Certain 3-letter file names, optionally followed by a colon, are reserved for the names of devices. These are as follows:

AUX or AUX:	Used when referring to input from or output to a device attached to the asynchronous serial communications port.
CON or CON:	Used when referring to either keyboard input or to output to the terminal screen.
PRN or PRN:	Used when referring to the printer.
NUL or NUL:	Used when you do not want to create a particular file, but the syntax of a command requires an input or output file name. For example, certain system utilities require you to supply the names of files to be created during execution. If you do not want to create the required file, you can use NUL for the file name. Then, the file itself is not produced and the file name requirement is fulfilled.

One place where you might use a reserved file name would be the FILE COPY utility. The prompt for the FILE COPY utility asks you for the name of an input file (the file to be copied) and an output file (the copy to be produced). By supplying PRN as the name of the output file, you instruct the computer to print the input file. That is, instead of creating another copy of the file on disk, the computer creates a printed copy of the file. If you gave CON as the name of the output file, the computer would display the input file on the screen. If the name of the output file were AUX, the computer would send the input file to your communications device.

NOTE:

Unless they have been modified by the user, all Wang PCs also accept the above reserved names when they are preceded by the characters /DEV/. For example, wherever you can use the reserved name PRN, you can use /DEV/PRN instead. It is possible to modify the operating system so that the reserved name must always be preceded by /DEV/. (Refer to the discussion of the file CONFIG.SYS in The Wang Professional Computer Program Development Guide.) If you modify the operating system in this way, the computer interprets a reserved name without /DEV/ as the name of a file, not a device. As shipped by Wang Laboratories, Inc., however, the operating system does not allow you to use these reserved file names for any purposes other than those listed in this guide.

In certain cases, you can replace the drive designation with a reserved file name. When you use a reserved file name in this way, you must type a colon immediately following the name. The colon tells the computer the reserved file name is replacing a drive designation.

1.4.3 All-purpose File Name Characters

The question mark and the asterisk are all-purpose characters that provide a shorthand notation for referencing several files in one file ID. When a question mark occurs in a file ID, the computer accepts as a match for the question mark any single character it finds in the same position in any file name or extension.

For example, you can use the FILE DELETE utility to delete several files at once. In response to the file ID prompt, you might supply the following file name for the file you wish to delete:

AB?DE

This response tells the computer to delete all files with five-letter names beginning with AB and ending with DE. In other words, the computer would delete the following files:

ABCDE
ABODE
ABIDE

The asterisk stands for enough question marks to fill the file name or extension field. Thus, the asterisk indicates that its position and any positions subsequent to it can be occupied by any character or by no character. For example, you might supply the following as the file ID for FILE DELETE:

AB*

This response tells the computer to delete all files whose names begin with AB, regardless of the length of the file name. Therefore, the computer would delete the following files:

- AB
- ABCDE
- ABXDE
- ABDEXYZ

Here are some other examples that use asterisks with equivalents in question mark characters:

<u>Asterisk</u>	<u>Question Mark Equivalent</u>	<u>Meaning</u>
TESTFILE.*	TESTFILE.???	The I/O instruction applies to all files named TESTFILE regardless of extension.
*.EXT	?????????.EXT	The I/O instruction applies to all files with the extension .EXT.
ABC*.E*	ABC?????.E??	The I/O instruction applies to all files whose names begin with ABC and that have an extension beginning with E.

Some system utilities such as FILE COPY and RENAME FILE have special uses for all-purpose characters. The utility descriptions in Sections 2.3 and 4.5 explain those purposes.

1.5 THE PATH NAME PARAMETER

When you instruct the computer to operate on a file, the computer uses the information in a disk's directories to locate the file. Every formatted disk has at least one directory, put there by the formatting process. This directory is called the disk directory. The Winchester's disk directory has room for 128 entries. However, the disk itself can hold thousands of files, depending upon the lengths of the files.

You can create directory entries for more than 128 files on the Winchester disk by using multilevel directories. This section explains multilevel directories and the path name parameter by which you make use of this feature. Multilevel directories are not recommended for diskettes. However, as you put your own files on the Winchester, you should create a multilevel directory structure for them. Otherwise, the Winchester's disk directory could soon be filled to capacity.

1.5.1 Multilevel Directories

In a multilevel directory structure, the entries in a directory can refer you both to ordinary files and to subdirectories. The entries in the subdirectories, in turn, can refer you to ordinary files or to further subdirectories. For example, the first directory on a disk may contain two entries: an entry for an accounts receivable file called RECEIVE and an entry for an accounts payable file called PAYABLE. Each of these files, in turn, could be a directory containing the names and locations of other files. For instance, each entry in RECEIVE could contain the name and location of a file for one of your customers.

The files referenced by PAYABLE, on the other hand, could be further directories. PAYABLE might have an entry for a tax-due file called TAXFILE and an entry for a file called VENDORS containing entries for other payments due. TAXFILE might contain entries for four files named CITY, COUNTY, STATE, and FEDERAL. Figure 1-1 illustrates these relationships.

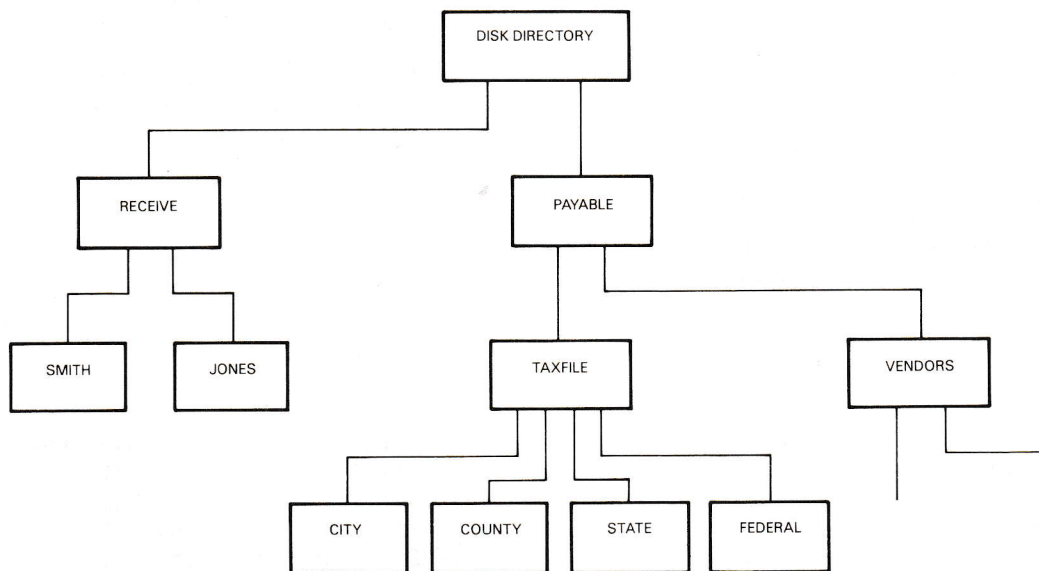


Figure 1-1. Multilevel Directories

This example shows that the ability to organize files is an advantage of multilevel directories in addition to increasing the number of directory entries. As another example of organization, the first directory of a disk might contain entries for subdirectories named TOM, DICK, and HARRY. Each subdirectory could contain only files belonging to the person with that name.

Multilevel directories also allow the use of duplicate file names. Each entry in a directory must be unique within that directory. For example, only one entry in a directory can be named TAXFILE. However, other directories can have entries with this name, as long as the name is unique within each directory.

The number of subdirectories you can enter in the disk directory is limited to 128. For other directories, the number of subdirectories and the number of entries in subdirectories are limited only by the physical capacity of the disk. However, it is not a good idea to make a multilevel structure too complicated. The more levels you have, the more directory names you have to remember and the more opportunities there are for you to make mistakes when entering a path name.

1.5.2 Specifying a Path Name

When you instruct the computer to access a file in a multilevel structure, the computer must know how to go from directory to subdirectory to get to the file. For example, to use the file CITY in our previous example, you must tell the computer to go to the disk directory and find the entry for the subdirectory named PAYABLE. The computer must then go to PAYABLE and find the entry for the subdirectory named TAXFILE. It must then go to TAXFILE and find the entry for the file named CITY. Then it goes to CITY.

The path name parameter gives the computer the information it needs to search a multilevel directory structure for a file. A path name consists of a name of a directory or a series of directory names, separated by slashes and optionally preceded by a drive designation. For example you would specify a pathname as follows:

PAYABLE/TAXFILE

If a path name contains a series of directory names, each successive name must belong to the next level of the structure. That is, you cannot skip any levels of the structure when you specify a path name.

The disk directory does not have a name since there is no previous directory to reference that name. If the path name you are specifying begins at the disk directory, you indicate this by placing a slash in front of the first name in the path. For example:

/PAYABLE/TAXFILE

When a path name is part of a file specification or file ID, a final slash separates the path name from the name of the file to be worked on. In this case you would specify the complete pathname as follows:

/PAYABLE/TAXFILE/CITY

The name following the final slash in a file ID can be the name of a directory since you may be trying to access a directory rather than an ordinary file.

A directory name must conform to the rules for file names given in Section 1.4. In particular, a directory name must consist only of characters allowable in file names and of no more than eight characters. However, a directory name cannot have an extension, and you cannot use all-purpose characters when referencing a directory.

As shipped by Wang Laboratories, Inc., the default path for file searches is the disk directory. You can use the PATH\-\CHANGE DIRECTORY option on the System Utilities Menu (refer to Section 2.3) or the CHDIR command from the DOS Command Processor (refer to Section 4.5) to change the default path.

The last entry in the default path name is the default directory. When you reference an entry in the default directory, you do not have to include the default path name in the file ID, file specification, or path name you supply. For example, if the default path name is /PAYABLE/TAXFILE and you wish to access the file CITY, you need only enter the following as the file ID:

CITY

Whenever a file ID, file specification, or path name does not begin from the default directory, it must start at the disk directory.

If there are subdirectories between the default directory and the file you want, the path name you supply must include the names of those subdirectories in the proper order. For example, if the default path name is /PAYABLE and you wish to access CITY, you must enter the following file ID:

TAXFILE/CITY

If you execute a program not on the default path, the path name you supply for that program becomes the default path name while that program is executing. For example, if the default path name is /PAYABLE and you want to access the file SMITH, contained in the directory RECEIVE, you can use the following file ID:

/RECEIVE/SMITH

The new path name overrides the default path name for the duration of the program. When the program terminates, the previous default path again takes effect.

In addition to the default path name, you can specify default alternate path names. An alternate path name defines a directory the computer searches when it does not find a referenced file in either the default directory or in the directory designated in the file specification. As shipped by Wang Laboratories, Inc., the computer uses /BIN as the default alternate path name. Thus, if you specify a file named CITY on a path named /PAYABLE/TAXFILE, and CITY does not exist in the directory named TAXFILE, the computer automatically searches for CITY in the subdirectory named BIN. If an alternate path was not specified, the computer would look for CITY in the disk directory.

NOTE:

The easiest way to make use of the multilevel directory feature is to put the application files you write into the subdirectory BIN when you copy them to or create them on the Winchester disk. As soon as you have formatted the Winchester, create subdirectory BIN by using the PATH - MAKE DIRECTORY system utility or the MKDIR DOS Command Processor command. Then, when you write an application, precede its file name with /BIN/. As long as /BIN/ is the default alternate path name, you need not include the /BIN/ when you subsequently reference the file. The computer automatically looks for the file whose name you supply first in the disk directory and then in BIN. The entries you put in BIN can be subdirectories.

Certain programs search alternate paths only for files with the extensions .COM, .EXE, and .BAT. This limitation is true when you are using the DOS Command Processor or running Multiplan or Wang PC Word Processing.

You can instruct the computer to use alternate paths other than the default alternate path established at system start-up. To do this, use the PATH - SELECT ALTERNATES option on the System Utilities Menu (refer to Section 2.3) or the PATH command from the DOS Command Processor (refer to Section 4.5). The discussion of the PATH - SELECT ALTERNATES system utility in Section 2.3 also explains how to change the default alternate path.

A path name can move in both the downward direction (the direction away from the disk directory toward its subdirectories) and the upward direction (from a subdirectory toward the disk directory). To specify the upward direction, you use a special symbol (..) that designates the directory immediately preceding. You use this symbol only when you have specified a default directory. The first occurrence of (..) in a path name indicates the directory that references the default directory. The next occurrence indicates the directory that references the directory preceding the default directory, and so on.

For example, if the default directory is TAXFILE and you want to enter a file ID for a file under RECEIVE, the file ID could use the path name:

../../RECEIVE

The first entry in this path name designates the directory that references TAXFILE, which is PAYABLE. The second entry designates the directory that references PAYABLE, which is the disk directory. Thus, this path name instructs the computer to go from the default directory back to the disk directory and then from the disk directory to another subdirectory.

If the default directory is PAYABLE, you could use either of the following path names in a file ID referencing a file under RECEIVE:

../RECEIVE or /RECEIVE

The first path name tells the computer to go from the default directory to its predecessor, the disk directory, and from there to RECEIVE. The second path name tells the computer to ignore the default path name for the duration of the instruction and use the specified path name, which begins at the disk directory.

1.5.3 Creating and Modifying a Directory Structure

To create a multilevel directory structure, you can use the PATH - MAKE DIRECTORY option on the System Utilities Menu (refer to Section 2.3) or select the DOS Command Processor and use the MKDIR command (refer to Section 4.5).

To remove a directory from a disk, use the PATH - REMOVE DIRECTORY option on the System Utilities Menu (refer to Section 2.3) or select the DOS Command Processor and use the RMDIR command (refer to Section 4.5). Before you can remove a directory, you must remove all files from it. To do this, use the FILE DELETE option on the System Utilities Menu or the DEL command from the DOS Command Processor.

1.6 THE VOLUME IDENTIFIER PARAMETER

The DISK FORMAT system utility allows you to give each disk an identifying label called a volume ID. A volume ID is a string of one to eleven characters. DISK FORMAT writes the volume ID on the disk, where it remains until you reformat the disk.

The volume ID is a security device that allows you to verify that you have mounted the right disk for the command you have entered. For example, different disks can have files of the same name. You may wish to delete a file named PAYDATA from one disk but not from another. The prompt for the FILE DELETE utility allows you to specify a volume ID. If you supply a value for this parameter, FILE DELETE does not erase PAYDATA unless the specified disk is in the drive.

Several of the system utility prompts contain a volume ID field. When you select one of these utilities, that field is blank. You can leave the field unchanged or enter a volume ID. When you execute the utility, the computer compares the specified volume ID with the disk in the drive you designated for the command. If you specified a volume ID and the IDs do not match, a message appears to inform you of this. At that point, you can continue the execution of the command by mounting a new disk and pressing any key except CANCEL.

When you give a diskette a volume ID, you should write the ID on the label of the diskette, using a felt-tip pen. If for some reason the volume ID is not on the label, you can use the CHECK DISK or DIRECTORY DISPLAY system utilities to display the volume ID. (Refer to Section 2.3.) You can also select the DOS Command Processor option from the Main System Menu and use one of the following commands: CHKDSK, DIR, or VOL. (Refer to Section 4.5.)

1.7 CREATING AND MODIFYING FILES

You usually create files from within an application program like Multiplan or a program development tool like interpretive BASIC. The programs from which you can create files have their own rules for file creation. The manuals describing these programs explain the rules.

Once you have created a file, you usually want to modify it. Sometimes you can modify files from within the program in which you created them—for example, Multiplan or BASIC. At other times, you modify files by using the Editor program described in Chapter 3. You can also create files using the Editor.

The Editor is principally designed for files containing source programs in the compiled languages and the Assembly language, and for files containing data for these programs. However, you can also use the Editor for files containing text to be printed or displayed on the screen—memos, lists, and so on. It is easier, however, to use PC Word Processing, if you have it on your system, to create files containing text of that kind.

The FILE COPY system utility and the COPY and WANGCOPY DOS utilities provide other ways to create files, although you cannot use these utilities to modify files. To modify files created by these utilities, you must use the Editor. For an explanation of creating files with these utilities, refer to FILE COPY in Section 2.3 and COPY and WANGCOPY in Section 4.5.

1.8 HIDDEN FILES

A disk can contain files that are not listed in any of its directories. These are called "hidden" files. Files are hidden for reasons of security. The FILE DELETE system utility can delete any file listed in a directory. In addition, using the asterisk all-purpose character with FILE DELETE allows you to delete all files listed in directories with one command. However, the FILE DELETE utility cannot delete hidden files.

If you want to delete hidden files, you must reformat the disk using the DISK FORMAT utility. The DISK FORMAT utility erases everything on the disk. In other words, you can remove hidden files only if you remove all other files.

Although the DIRECTORY DISPLAY utility does not display entries for hidden files, the CHECK DISK utility tells you how many hidden files a disk contains. The Wang Professional Computer Program Development Guide explains how a file becomes hidden.

2

USING THE SYSTEM UTILITIES

Introduction
The System Utilities Menu
System Utility Descriptions



CHAPTER 2 USING THE SYSTEM UTILITIES

2.1 INTRODUCTION

This chapter explains how to use the Wang PC system utilities. System utilities are general purpose programs that support the use of the computer for business or personal applications. Although a system utility program itself may have no direct business or personal application, it is necessary for other uses of the computer that do have such applications. For example, a system utility called FILE COPY enables you to make backup copies of your files. Although the files you copy can have any kind of business or personal application, FILE COPY, alone, usually does not.

2.2 THE SYSTEM UTILITIES MENU

This section lists the options on the System Utilities Menu and briefly describes the function of each. Figure 2-1 shows that menu.

```

mm/dd/yy      Wang Professional Computer      hh:mm:ss
                SYSTEM UTILITIES MENU
                Release 1.20

Select an Item and Proceed

- Check Disk
- Directory Display
- Disk Copy
- Disk Format
- File Compare
- File Copy
- File Copy with Append
- File Delete
- File Display
- File Rename
- Modify System Menus
- Path - Change Directory
- Path - Make Directory
- Path - Remove Directory
- Path - Select Alternates
- Set Date
- Set Default Drive
- Set Keyboard Options
- Set National Defaults
- Set Time
- Winchester Backup
- Winchester Restore
- Write Verify
- Other

SPACE BAR - Item Select
EXECUTE - Proceed
CANCEL - Previous Menu
  
```

Figure 2-1. The System Utilities Menu

The following list gives the function of each option on this menu:

<u>Utility</u>	<u>Function</u>
CHECK DISK	Analyzes the contents of a disk, checks for inconsistencies between the directories and the File Allocation Table (FAT), and reports the number of bytes available on disk and in memory; optionally restores consistency, reports the number of noncontiguous allocation units per file or per disk, and prints files and directories as they are being processed.
DIRECTORY DISPLAY	Displays on the screen an entire directory, specific directory entries, or the file names in a directory.
DISK COPY	Copies the entire contents of one diskette onto another and reformats the destination diskette if necessary.
DISK FORMAT	Prepares a disk to accept files by initializing the disk directory, File Allocation Table, and other areas of the disk; also analyzes the disk for any defective tracks.
FILE COMPARE	Compares the contents of two files, displays their differences, and tabulates the number of differences.
FILE COPY	Makes duplicate copies of one or more files; can also create files.
FILE COPY WITH APPEND	Makes a combined file by appending one or more files to another file.
FILE DELETE	Deletes a file or a group of files from a disk.
FILE DISPLAY	Displays the contents of a file on the screen and/or prints the file.
FILE RENAME	Changes the name of a file.

Using the System Utilities

<u>Utility</u>	<u>Function</u>
MODIFY SYSTEM MENUS	Modifies existing menus or help screens and creates new menus.
PATH - CHANGE DIRECTORY	Specifies or changes the default directory used by the computer for file searches.
PATH - MAKE DIRECTORY	Creates a new subdirectory.
PATH - REMOVE DIRECTORY	Removes an empty subdirectory from a disk.
PATH - SELECT ALTERNATES	Defines the directories that are searched when a referenced file is not found in either the default directory or in the directory designated in the file specification; optionally, displays the current alternate path names.
SET DATE	Displays the current date, as known to the computer, and allows you to change it.
SET DEFAULT DRIVE	Changes the default disk drive.
SET KEYBOARD OPTIONS	Sets the volume for the keyboard click and speaker.
SET NATIONAL DEFAULTS	Sets the default values for various parameters as they are used in different countries.
SET TIME	Displays the current time, as known to the computer, and allows you to change it.
WINCHESTER BACKUP	Creates a backup copy of the Winchester disk or a portion of the Winchester disk; also formats nonformatted diskettes used for the backup.
WINCHESTER RESTORE	Copies files created by the WINCHESTER BACKUP utility from a diskette onto the Winchester disk.
WRITE VERIFY	Compares input to output when the computer creates, modifies, or copies files.

2.2.1 Internal and External Utilities and Files

There are two types of system utilities and files: internal and external. Internal utilities and files are always available in memory when the System Utilities Menu appears. External utilities and files reside on disk, and the computer must read them from a disk before it can execute them. Therefore, you cannot load an external utility or file unless a disk containing that utility (or file) is in a drive. The list below and the descriptions of each system utility in Section 2.3 tell you whether each utility and file is internal or external.

The external utilities and files are listed as follows, by menu:

- Applications Menu
 - Convert Document to Text
 - Convert Text to Document
- Communications Menu
 - Set Serial Port #1 Options
- Program Development Menu
 - BASIC
 - Editor
- System Utilities Menu
 - Check Disk
 - Disk Copy
 - Disk Format
 - File Compare
 - File Copy
 - File Copy with Append
 - Modify System Menus
 - Winchester Backup
 - Winchester Restore

The external utilities and files that Wang provides with the system software are all located on System Diskettes II and III. When you load these external utilities and files, you need to place System Diskette II or III into the default drive. The system then loads the external utility or file. After you run the utility or use the file, replace System Diskette II or III with System Diskette I. The system then reloads the System Utilities Menu.

If you have a dual diskette drive system, you could modify the external utilities and files with the MODIFY SYSTEM MENUS utility (see Section 2.3.12) to use Drive B. Then, when you need to load an external utility or file, you could place System Diskette II or III into Drive B and leave System Diskette I in Drive A. This technique minimizes switching of diskettes while using external utilities.

Using the System Utilities

If you have a single diskette drive system or if you have not inserted the correct diskette in the default drive, the system prompts you to switch diskettes when you select an external utility or file. For example, if you load the System Utilities Menu and select the external utility FILE COPY, the system prompts you with a message that the FILE COPY utility was not found. At this point, remove System Diskette I from the drive and insert System Diskette II. Press EXEC to initiate the loading of FILE COPY and the system then loads it.

When you exit from an external utility or file, the system prompts you with a message to replace System Diskette I in the default drive. Remove System Diskette II or III from the drive, and insert System Diskette I. The system automatically reloads the System Utilities Menu.

2.3 SYSTEM UTILITY DESCRIPTIONS

This section presents a detailed explanation of each system utility, in alphabetical order. The explanations include a statement of the function of the utility, its type (internal or external), the prompts displayed when you select the utility, and examples, where appropriate. The explanations assume a familiarity with the discussion of file-management parameters in Chapter 1.

2.3.1 CHECK DISK Utility

Function

This utility analyzes the contents of a disk, checks for inconsistencies between the directories and the File Allocation Table, and reports the number of bytes available on disk and in memory. Optionally, it restores consistency, reports the number of noncontiguous allocation units per file or per disk, and displays the names of files and directories as they are being processed.

Type

External, on System Diskette II

Prompt

SYSTEM UTILITIES - CHECK DISK

Default Pathname: A:/

Drive: A Volume ID: _____

File ID: _____

Error fix-up? (Yes/No) N

Trace? (Yes/No) N

EXECUTE - Proceed
 CANCEL - Return to Menu
 RETURN - Go to Next Field

Drive	a letter of the alphabet designating a drive
Volume ID	optional; 1 to 11 characters
File ID	optional; a 1-character to 8-character file name, optionally preceded by a path name, optionally followed by a 1-character to 3-character extension; a maximum of 50 characters, including punctuation

Using the System Utilities

Comments

1. You should run this utility occasionally on each disk to ensure the integrity of the directories, since it is possible for a directory to become inconsistent with the contents of the File Allocation Table (FAT).

A directory entry contains the number of the starting allocation unit (i.e., the physical location of the file on the diskette) for each file. Most files are not stored within one unit. Therefore, to direct the system to the allocation unit of the next portion of a file, the computer uses the FAT. The FAT has an entry for each allocation unit on the disk. The entry contains the number representing the next allocation unit of the file that is being accessed (i.e., essentially, a linked list of a file's allocation units).

The general procedure for using FAT is that the computer reads the starting allocation unit for a file from the file's directory. It then goes to that allocation unit on the diskette and reads the file information. If the file continues, the computer goes to the FAT entry for the allocation unit it is currently in. The entry contains the allocation unit for the next portion of the file. The system then proceeds to that portion of the diskette, reads the information, and so on.

The FAT entry for a file's second allocation unit contains the number of the third, and so on. The entry for a file's last allocation unit has an end-of-file indicator. An allocation unit whose FAT entry is zero is not allotted to any file.

An accident, such as a power failure or the inadvertent removal of a diskette from a drive while the diskette is being accessed, can cause an I/O operation to abort after the system has updated the directory but before it has finished writing a file to disk. As a result, a directory may indicate that an allocation unit is used even though the FAT indicates that it is not.

2. The CHECK DISK utility produces a report like the following:

```
160256 bytes in total disk space
38400 bytes in 2 hidden files
1024 bytes in 2 directories
82432 bytes in 8 user files
38400 bytes available on disk

131072 bytes in total memory
91856 bytes free
```

3. Responding Y to the Error fix-up option allows you to correct inconsistencies between the FAT and the directories. The FAT may indicate that an allocation unit is in use even though it is not assigned to a file named in some directory. If you request an error fix-up and CHECK DISK finds unassigned units, CHECK DISK asks you whether you want the inconsistency corrected by freeing or recovering these units. Freeing the units sets their FAT entries to zero, indicating that the units are unused. Recovering the units allows you to inspect their contents to see if they contain valuable data.

When you instruct the computer to recover the units, it puts the unassigned units into files with a file name of the form FILEnnnn and the extension .CHK. (nnnn represents a number. The first FILEnnnn.CHK file has the number 0001. The number increases by one for each additional file CHECK DISK creates.) Each FILEnnnn.CHK file contains allocation units whose FAT entries are linked. CHECK DISK enters the FILEnnnn.CHK files in the disk directory. If there is not enough room in the disk directory, CHECK DISK leaves the unrecovered units in the FAT. After inspecting these files and rescuing valuable data, you can remove some entries from the disk directory and use CHECK DISK again to create additional FILEnnnn.CHK files. Be aware that the creation of these files is a very slow process.

4. If you specify a file ID, CHECK DISK reports the number of noncontiguous allocation units (called extents) in the file by displaying the message:

3 extents found in files specified

To find the number of noncontiguous allocation units in all the files on the disk, enter the following for the file ID:

,

If the space on the disk is not efficiently distributed, I/O operations will take longer than necessary. The more noncontiguous allocation units there are assigned to files, the longer it takes to access them. CHECK DISK can help you decide whether to rewrite some or all of the files to the disk for more efficient use of space.

5. If you respond Y to the Trace prompt, CHECK DISK displays the names of directories and files as it processes them. Thus, if you request an error fix-up, the Trace function tells you where the inconsistency occurred by displaying the name of the directory or file in which it is working.

6. The volume ID field displays the volume ID of the disk that is in the default drive at the time you selected CHECK DISK. If this is not the disk you want to check, you can enter another volume ID. If the volume ID of the disk in the specified drive does not match the volume ID in the prompt, CHECK DISK returns a message informing you of the inconsistency. You can then either mount another diskette or enter another volume ID and press EXECUTE.

7. On a single-drive system, specify the nondefault drive in the Drive field of the CHECK DISK prompt. When you press EXEC, the computer prompts you to insert a disk in the nondefault drive. At that point, you insert the disk you want checked in your drive.

NOTE:

This utility makes the specified drive the default drive for the duration of the execution of the utility. Therefore, if the utility terminates prematurely (e.g., if you press CANCEL after an error message appears), the drive that the CHECK DISK utility was checking remains the default drive.

Example

```
Drive: B           Volume ID: _____  
File ID: _____  
Error fix-up? (Yes/No) N  
Trace? (Yes/No) N
```

In this example, CHECK DISK checks the disk in Drive B to ensure that the directories are consistent with the FAT.

2.3.2 DIRECTORY DISPLAY Utility

Function

This utility displays an entire directory, specific directory entries, or the file names in a directory. The display for each directory entry can include a file name and extension, the file's size (in bytes), and the time and date the file was last modified.

Type

Internal

Prompt

```

                                SYSTEM UTILITIES - DIRECTORY DISPLAY

Default Pathname: A:/
File:
  Drive: A                      Volume ID: _____
  File ID: _____
  Page Display? (Yes/No) Y
  File Names Only? (Yes/No) N

                                EXECUTE - Proceed
                                CANCEL  - Return to Menu
                                RETURN  - Go to Next Field

```

Drive	a letter of the alphabet designating a drive
Volume ID	optional; 1 to 11 characters
File ID	optional; a 1-character to 8-character file name, optionally preceded by a path name, optionally followed by a 1-character to 3-character extension; a maximum of 50 characters, including punctuation

Using the System Utilities

Comments

1. A directory display appears as follows:

RESUME	#2	855	10-28-83	15:01p
RESUME	#3	1027	11-30-83	3:13a
JOBFILE	<DIR>		9-12-83	8:00a
COVERLET	TER	256	9-12-83	8:13a

The first item in each row is a file name and extension. The second item is either the number of bytes in the file or the characters <DIR> indicating that the file is a directory. The third item in each row is the date the file was created or last modified. The last item is the time the file was created or last modified.

2. This utility does not display directory entries for hidden files. (Refer to Section 1.8.) Excluding hidden files from directory searches protects them from accidental deletion or overwriting by a FILE COPY WITH APPEND command.
3. To display all files except hidden files in a directory, leave the file ID field blank.
4. If the only value you enter for the file ID is a file name or extension, DIRECTORY DISPLAY lists all the entries in the default directory for files with that file name or extension, with the exception of hidden files.
5. If you enter both the file name and extension, DIRECTORY DISPLAY lists only the entry in the default directory for that file, unless the file is hidden.
6. If you include a path name in the file ID, the path name may be followed by a file name only, an extension only, or a file name with extension. If the path name is followed by a file name or extension, DIRECTORY DISPLAY lists all the entries in the specified directory for files with that name or extension. If the path name is followed by a file name and extension, only the entry for that file appears.
7. You can use the all-purpose characters (? and *) for the file name and extension parameters, as explained in Section 1.4.3. For example, supplying ?FILE for the file name and EXE for the extension could produce a display like the following:

AFILE.EXE	100	12-03-83	3:17a
BFILE.EXE	94755	12-10-83	17:34p
CFILE.EXE	3846	12-11-83	15:15p

8. This utility can produce more output than the screen can hold at one time. This causes the information displayed on the screen to scroll upward until the execution of the utility is complete. Scrolling upward means the top line is erased from the screen and all other lines move up by one position, making room for a new bottom line. If you respond to "Page Display?" with Y, the scrolling pauses each time the screen is full. To resume the scroll, press any key.

If you respond to "Page Display?" with N, you can stop the scrolling without terminating the display by pressing CONTROL + S. To continue the scroll, press CONTROL + Q.

9. If you respond to "File Names Only?" with Y, only file names and extensions appear, not the full directory entries. Five entries appear for each line of display.

Example

File ID:/MY-INDEX/*.TAX

Specifying this file ID causes DIRECTORY DISPLAY to list the entries in the directory named MY-INDEX for files that have the extension .TAX.

Using the System Utilities

2.3.3 DISK COPY Utility

Function

This utility copies the entire contents of one diskette onto another and reformats the destination diskette if necessary.

Type

External, on System Diskette II

Prompt

```

                                SYSTEM UTILITIES - DISK COPY

Default Pathname: A:/

Input
  Drive: A

Output
  Drive: A

          Define Input for NON-DOS Diskettes
    _ 360KB    _ 320KB    _ 180KB    _ 160KB

                                EXECUTE - Proceed
                                CANCEL  - Return to Menu
                                RETURN  - Go to Next Field

```

Drive a letter of the alphabet designating a drive

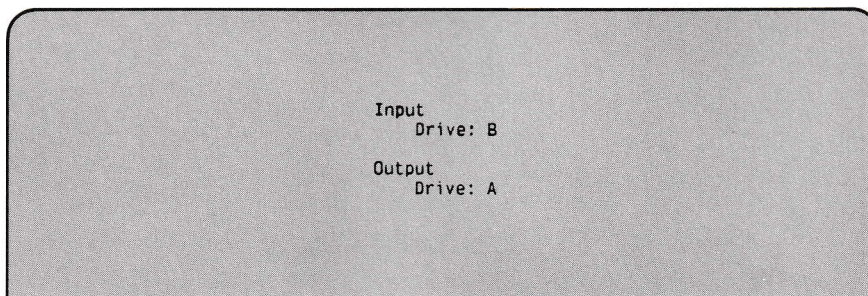
Comments

1. This utility makes an exact duplicate of the diskette on the input drive, including the diskette format, hidden files, empty space, and the volume ID. Therefore, the newly written diskette has the same volume ID as the input diskette.

Using the System Utilities

2. If the input diskette was created under an operating system other than MS-DOS, you must specify the format of the diskette by selecting one of the options for NON-DOS diskettes. The utility cannot copy a diskette that does not have one of these formats. The utility ignores these options for diskettes created under MS-DOS.
3. If the output diskette does not have the format of the input diskette, the utility formats the output diskette as it copies the input diskette.
4. On a single-drive system, the utility reads a portion of the input diskette into memory, then prompts you to insert the output diskette. It then writes the portion in memory to the output diskette, and prompts you to re-insert the input diskette to continue the process.
5. This utility is designed for use with diskettes only. Do not use it to copy diskettes onto the Winchester disk, or to copy Winchester disk files onto a diskette. Use the special Winchester utilities, WINCHESTER BACKUP and WINCHESTER RESTORE, to complete these actions.

Example



The utility copies the contents of the diskette in Drive B to the diskette in Drive A.

Using the System Utilities

2.3.4 DISK FORMAT Utility

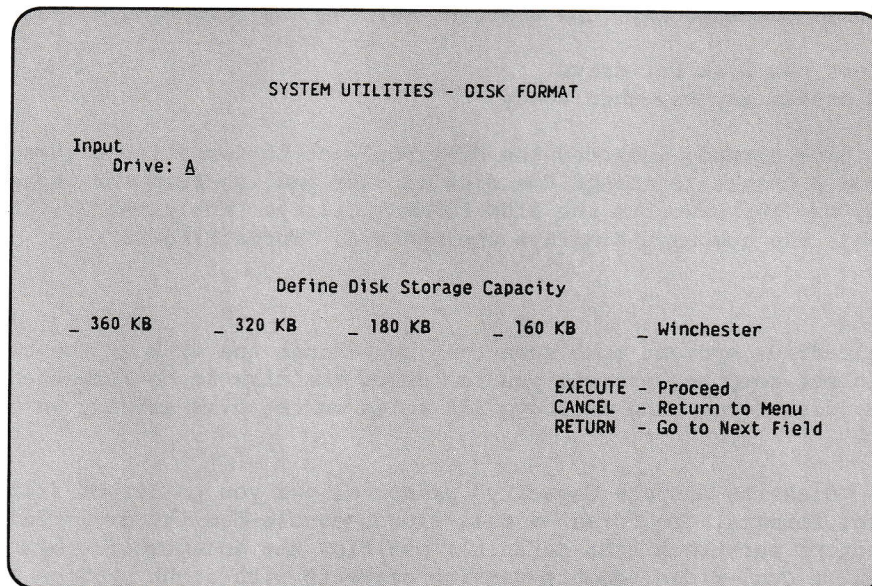
Function

This utility prepares a disk to accept files by initializing the disk directory, File Allocation Table (FAT), and other areas of the disk and by analyzing the disk for any defective tracks.

Type

External, on System Diskette II

Prompt



```

                                SYSTEM UTILITIES - DISK FORMAT

Input
  Drive: A

                                Define Disk Storage Capacity

_ 360 KB    _ 320 KB    _ 180 KB    _ 160 KB    _ Winchester

                                EXECUTE - Proceed
                                CANCEL  - Return to Menu
                                RETURN  - Go to Next Field

```

Drive a letter of the alphabet designating a drive

Volume ID optional; 1 to 11 characters

Using the System Utilities

Comments

1. You must format a disk in order for the computer to store information on it in a retrievable form. For example, the disk directory and FAT must be written according to a specific format.
2. You can use this utility on a disk that has already been formatted. However, you must do this with caution since formatting destroys all previously existing data on the disk.

CAUTION:

Do not reformat a disk unless you have made backup copies of the files you wish to retain.

3. When you have entered the parameter values for the DISK FORMAT utility and pressed the EXEC key, the computer returns the following message:

Insert new disk for drive _:
and strike any key when ready

You may have already inserted the disk you want to format, but this message gives you a chance to change the disk in case you inserted the wrong one. Striking any key executes the DISK FORMAT utility. While the utility is executing, the computer displays the message, "Formatting..."

CAUTION:

On a single-drive system, make sure that you change the disk in the single drive when the computer prompts you to insert the disk to be formatted. Otherwise, disk formatting destroys all files on the disk already in the drive.

4. The "Diskette Storage Capacity" prompt allows you to select from five different formats. To format a dual-sided, double-density diskette with nine sectors per track (the default), position the acceptance block at 360. To format a dual-sided, double-density diskette with eight sectors per track, position the acceptance block at 320. To format a single-sided, double-density diskette with nine sectors per track, position the acceptance block at 180. To format a single-sided, double-density diskette with eight sectors per track, position the acceptance block at 160. To format the Winchester disk, position the acceptance block at Winchester.
5. When the utility has finished formatting, the message, "Volume label (11 characters, RETURN for none)?", appears. The Volume label is the Volume ID. Enter up to 11 characters and press RETURN, or press RETURN alone if you do not want a Volume ID. If you specify a volume ID, DISK FORMAT writes the characters you supply on the disk. The disk retains that volume ID until you format it again.

Using the System Utilities

6. When you have responded to the Volume label prompt, the computer displays the message:

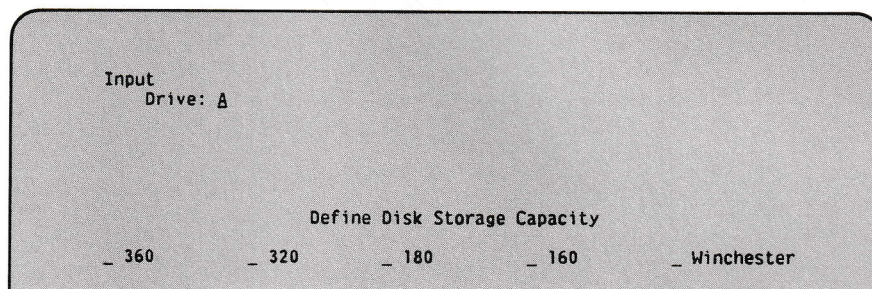
```
Format completed...
nnnn bytes total disk space
nnnn bytes available on disk
Format another (Y/N)?_
```

Press Y to format another disk or N to cease formatting.

7. If DISK FORMAT encounters any defective sectors while formatting a disk, it indicates that the sectors are bad in the FAT. This prevents the computer from allocating defective sectors to any files.

8. To find out whether a disk has any defective tracks, use the CHECK DISK utility after you have formatted the disk. The CHECK DISK report gives the number of bytes, if any, in bad sectors.

Example



The screenshot shows a text-based interface for the DISK FORMAT utility. At the top left, it says 'Input Drive: A'. In the center, the title 'Define Disk Storage Capacity' is displayed. Below this title, there are five options, each preceded by an underscore: '_ 360', '_ 320', '_ 180', '_ 160', and '_ Winchester'. The options are arranged horizontally.

This example causes DISK FORMAT to format the disk in Drive A as double-sided, dual-density with nine sectors per track.

2.3.5 FILE COMPARE Utility

Function

This utility compares the contents of two files, displays their differences, and tabulates the number of differences.

Type

External, on System Diskette II

Prompt

```

                                SYSTEM UTILITIES - FILE COMPARE

Default Pathname: A:/

File #1
  Drive: A                      Volume ID: _____
  File ID: _____

File #2
  Drive: A                      Volume ID: _____
  File ID: _____

                                Error Limit: __

                                RETURN - Next Field      EXECUTE - Proceed
                                BACKTAB - Prior Field      CANCEL  - Previous Menu

```

Drive a letter of the alphabet designating a drive

Volume ID optional; 1 to 11 characters

File ID a 1-character to 8-character file name, optionally
preceded by a path name, optionally followed by a
1-character to 3-character extension; a maximum of
50 characters, including punctuation

Using the System Utilities

Comments

1. When you have responded to the first prompt, the following prompt appears on the screen:

```

Default Pathname: A:/

      _ Screen      Output      _ File
      _ Printer

Drive: A           Volume ID: _____

File
ID: _____

Error Limit: 00

```

Your response to the Output prompt determines where the utility sends the results of the comparison. You can display the results on the screen, print them, or store them in a file. If you select the file option, you must supply a file ID and may supply a drive designation and volume ID.

2. This utility displays the differences between two files as follows:

```

File #1: Filename
File #2: Filename

File #1      00020H      00032
#2           HH         D
           HH         D

File #1      000FFH      255
File #2      HH         D
           HH         D

Error Counter ---

Press Any Key to Continue      CANCEL - Abort Compare

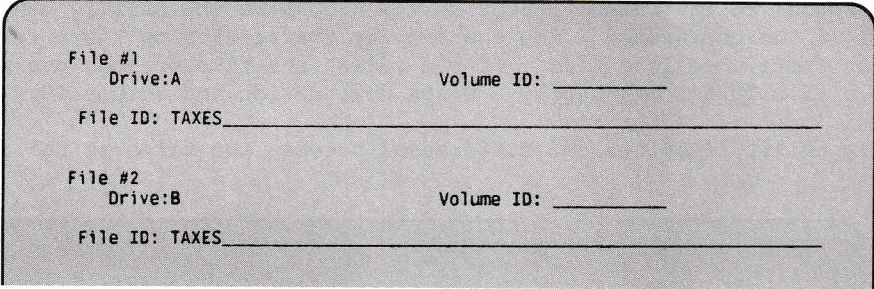
```

At the head of the middle and right-hand columns is the number of a byte where the two files differ. The contents of that byte in each of the two files appears below the byte number. In the middle column the contents are represented by hexadecimal (base 16) numbers, indicated in the illustration by HH. The values in the right-hand column, indicated in the illustration by D, are the ASCII code equivalents of those in the middle column.

3. The Error Limit prompt allows you to set a specific number of differences after which you can terminate the comparison. As soon as FILE COMPARE reaches that limit, a prompt appears that allows you to terminate the utility or continue processing. There is no default error limit.

4. During the comparison, the message "Comparing Files" appears.

Example



The screenshot shows a file comparison utility interface. It is divided into two sections for File #1 and File #2. File #1 is located on Drive:A and File #2 is on Drive:B. Both files are named 'TAXES'. Each section has a 'Volume ID:' field followed by a blank line for input. The entire interface is enclosed in a rounded rectangular border.

```
File #1
  Drive:A                      Volume ID: _____
File ID: TAXES_____

File #2
  Drive:B                      Volume ID: _____
File ID: TAXES_____
```

The utility compares the files named TAXES on the diskettes in Drives A and B.

Using the System Utilities

2.3.6 FILE COPY Utility

Function

This utility can make a copy of a file, with or without changing the file name, and can create files.

Type

External, System Diskette II

Prompt

SYSTEM UTILITIES - FILE COPY
Release 1.20

Default Pathname:

Input File:
Drive: A Volume ID: _____

File ID: _____

Output File:
Drive: A Volume ID: _____

File ID: _____

Please Mount Disks to be Copied . . .

RETURN - Next Field
CANCEL - Return to Menu
EXECUTE - Proceed

Drive a letter of the alphabet designating a drive

Volume ID optional; 1 to 11 characters

File ID a 1-character to 8-character file name, optionally preceded by a path name, optionally followed by a 1-character to 3-character extension; a maximum of 50 characters, including punctuation

Using the System Utilities

Comments

1. When you select FILE COPY from the System Utilities Menu, only the prompt for the input file appears. Enter the parameter values for the input file and press EXEC. The output file prompt then appears below the input file prompt. The parameter values entered for the input file prompt appear in the output file prompt as default values.

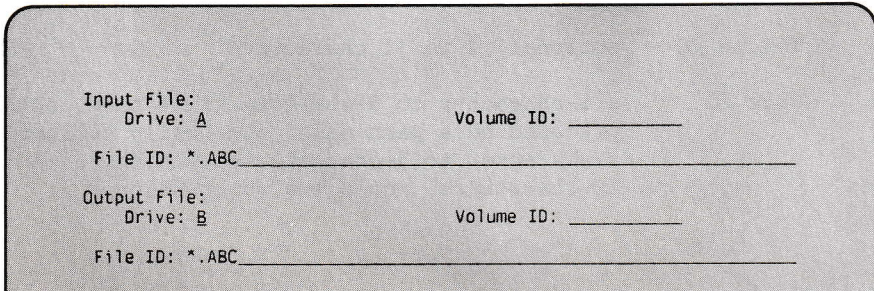
Two files cannot have the same file specification, but files on different disks can have the same file ID (path name, file name and extension). Therefore, you can copy a file without changing the file ID, but only if you copy it to a different disk. You can copy a file to the same disk only if you change at least one of the components of the file ID.

2. If a file on the disk designated for the output file has the same file ID as the output file, the utility returns a prompt asking you whether you want to specify a new file ID for the output file or overwrite the old file. If you do not specify a new file ID, the old file is destroyed when the utility creates the new file.

3. In order to create a disk file from the keyboard, supply CON as the file ID of the input file and any legal file ID you wish for the output file. Recall that CON (for console) is the reserved file name for the terminal. By using this name, you send whatever you type after EXECUTE to the disk under the output file ID. You must terminate the last line in the file by pressing RETURN, then press CONTROL + Z followed by another RETURN. Before you press CONTROL + Z, you can delete the file by pressing CONTROL + C.

4. You can use the all-purpose file name characters ? and * for the file name and extension parameters of both the input and output files. (Refer to Section 1.4.3.) However, you cannot use the all-purpose file name characters within the path name. To copy all files from one diskette to another diskette, or from a diskette to the Winchester disk, use the *.* all-purpose characters.

The following example copies all the files with extension ABC from the disk in Drive A to the disk in Drive B with no change in file names.



```
Input File:
  Drive: A           Volume ID: _____
File ID: *.ABC_____

Output File:
  Drive: B           Volume ID: _____
File ID: *.ABC_____
```

Using the System Utilities

The following example copies the file AFILE.ABC from the disk in Drive A to the disk in Drive B, naming the copy BFILE.ABC.

Input File:		Volume ID: _____
Drive: A		
File ID: AFILE.ABC	_____	
Output File:		Volume ID: _____
Drive: B		
File ID: BFILE.*	_____	

The following example copies all files on the disk in Drive B with a 1-character file name and the extension EXE to the disk in Drive A. The file name and extension remain the same.

Input File:		Volume ID: _____
Drive: B		
File ID: ?.EXE	_____	
Output File:		Volume ID: _____
Drive: A		
File ID: ?.EXE	_____	

5. When you use all-purpose characters, the file names you specify for the output files may already exist on the disk you are writing to. Creating the output file would overwrite the existing file, and you could lose a file you wanted to keep. To prevent this from happening, the computer displays a prompt with the following options whenever you use an all-purpose character in the output file name:

Options for Processing Existing Files	
Automatically Bypass All Existing Files	
Automatically Copy Over All Existing Files	
Prompt for Each File Individually	
SPACE BAR	- Select Option
EXECUTE	- Proceed
CANCEL	- Return to Menu

Using the System Utilities

2.3.7 FILE COPY WITH APPEND Utility

Function

This utility makes a combined file by appending one or more files to another file. Separate copies of the original files can be retained.

Type

External, System Diskette II

Prompt

SYSTEM UTILITIES - FILE COPY WITH APPEND

Default Pathname: A:/

Input File # 1:
 Drive: A Volume ID: _____

File ID: _____

File Type? (ASCII/Binary) A

Input File # 2:
 Drive: A Volume ID: _____

File ID: _____

File Type? (ASCII/Binary) A

More Input Files? (Yes/No) N

EXECUTE - Proceed
 CANCEL - Return to Menu
 RETURN - Go to Next Field

- Drive a letter of the alphabet designating a drive
- Volume ID optional; 1 to 11 characters
- File ID a 1-character to 8-character file name, optionally preceded by a path name, optionally followed by a 1-character to 3-character extension; a maximum of 50 characters, including punctuation

Using the System Utilities

Comments

- ```

Input File # 1:
 Drive: A
Volume ID: _____

File ID: *.ABC_____

Input File # 2:
 Drive: A
Volume ID: _____

File ID: _____

```

## Using the System Utilities

The following example combines all files matching \*.LST, then all files matching \*.REF into one file named LST-REF.

|                  |                  |
|------------------|------------------|
| Input File # 1:  | Volume ID: _____ |
| Drive: A         |                  |
| File ID: *.LST   | _____            |
| Input File # 2:  | Volume ID: _____ |
| Drive: A         |                  |
| File ID: *.REF   | _____            |
| Output File # :  | Volume ID: _____ |
| Drive: A         |                  |
| File ID: LST.REF | _____            |

5. All-purpose file name characters also allow you to issue one FILE COPY WITH APPEND command that has the effect of several individual commands. For example:

|                |                  |
|----------------|------------------|
| Input File 1:  | Volume ID: _____ |
| Drive: A       |                  |
| File ID: *.ABC | _____            |
| Input File 2:  | Volume ID: _____ |
| Drive: A       |                  |
| File ID: *.DEF | _____            |
| Output File:   | Volume ID: _____ |
| Drive: A       |                  |
| File ID: *.GHI | _____            |

The difference between this example and the second example in Comment 4 is that no file name is specified for the output file. As a result, each pair of .ABC and .DEF files that have the same file name are combined into one file. Thus, if there are five .ABC files whose names match those of .DEF files, five output files with those names and the extension .GHI result.

#### CAUTION:

Using all-purpose file name characters in a FILE COPY WITH APPEND command can cause the accidental deletion of a file. It is possible to unknowingly specify a name for the output file that is the same as one of the files to be combined. For example, assume that a file named ALL.LST already exists and that you use an asterisk in the first file name prompt to instruct the computer to combine the .LST files into one. Then you give the output file the name ALL.LST thinking that it is a new name. The command causes the computer to create a new file called ALL.LST and then search for the input

Using the System Utilities



files, comparing their names with ALL.LST as it searches. When the computer finds a match for ALL.LST, it deletes that input file and displays the "Content of destination lost before copy" message. If you already know ALL.LST exists, you can combine all .LST files into a file named ALL.LST by entering ALL.LST in the prompt for the first file ID, \*.LST in the prompt for the second, and nothing for the output file. Then the computer simply searches for the existing ALL.LST file and appends all other .LST files to it.

6. You do not need to address the "File Type?" prompt unless you are a programmer using files created by the Linker (refer to the Wang Professional Computer Program Development Guide), the Assembler, or one of the compilers (refer to the appropriate language manual). All other users can leave the default response unchanged. Refer to the COPY + utility in Section 4.5 for specific information on the file type.



### 2.3.8 FILE DELETE Utility

#### Function

This utility deletes a specified file or group of files from a disk.

#### Type

Internal

#### Prompt

SYSTEM UTILITIES - FILE DELETE

Default Pathname: A:/  
File:

Drive: A                      Volume ID: \_\_\_\_\_

File ID: \_\_\_\_\_

EXECUTE - Proceed  
CANCEL - Return to Menu  
RETURN - Go to Next Field

|           |                                                                                                                                                                                              |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Drive     | a letter of the alphabet designating a drive                                                                                                                                                 |
| Volume ID | optional; 1 to 11 characters                                                                                                                                                                 |
| File ID   | a 1-character to 8-character file name, optionally preceded by a path name, optionally followed by a 1-character to 3-character extension; a maximum of 50 characters, including punctuation |

Using the System Utilities

### Comments

1. When you press EXEC, the utility immediately deletes the file or files you selected. In most cases, the utility does not first display a prompt asking you to verify whether the parameter values you entered are correct. (Comment 4 discusses an exception to this rule.)

#### CAUTION:

Before you press EXEC, always check to make sure you have entered the correct drive designation, file ID, and/or volume ID for what you wish to delete. Otherwise, you can delete files you did not intend to delete.

2. This utility does not delete directories. To delete a directory, use the PATH - REMOVE DIRECTORY utility. (Refer to Section 2.3.14.)
3. To delete more than one file at a time, use the all-purpose characters (? and \*) in the file name or extension. (Refer to Section 1.4.3.) For example, supplying the following file ID deletes all files with 1-character or 2-character file names and the extension .ABC:

??ABC

#### CAUTION:

Be very careful when using all-purpose characters with the FILE DELETE utility because you may delete a file you wish to retain.

4. To delete all files on a disk, with the exception of hidden files, enter the following file ID:

\*.\*

The computer responds with the prompt, "Are you sure? (Y/N)\_" A response of Y deletes all files as requested.

### Using the System Utilities

Example

File:

Drive: B                      Volume ID: \_\_\_\_\_

File ID: TESTFILE.\* \_\_\_\_\_

This example deletes all files on Drive B with the file name TESTFILE, regardless of extension.



### 2.3.9 FILE DISPLAY Utility

#### Function

This utility displays the contents of a file on the screen and/or prints the file.

#### Type

Internal

#### Prompt

SYSTEM UTILITIES - FILE DISPLAY

Default Pathname: A:/

Drive: \_ Volume ID: \_\_\_\_\_

File ID: \_\_\_\_\_

Output:  
\_ Screen                      \_ Printer                      \_ Both

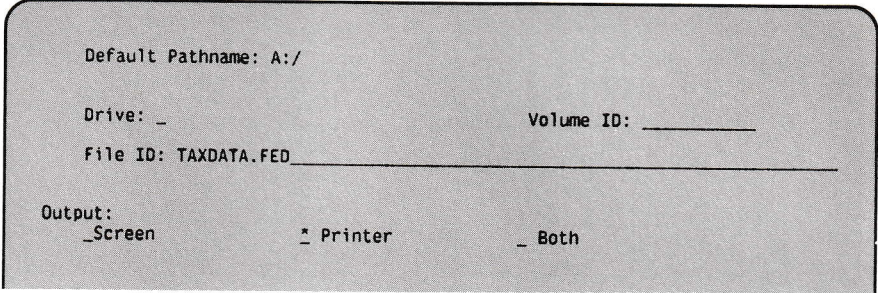
EXECUTE - Proceed  
CANCEL - Return to Menu  
RETURN - Go to Next Field

|           |                                                                                                                                                                                                        |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Drive     | a letter of the alphabet designating a drive                                                                                                                                                           |
| Volume ID | optional; 1 to 11 characters                                                                                                                                                                           |
| File ID   | optional; a 1-character to 8-character file name, optionally preceded by a path name, optionally followed by a 1-character to 3-character extension; a maximum of 50 characters, including punctuation |

#### Using the System Utilities

Comments

1. If you select Screen for the output, the utility sends the contents of the file to the screen only. If you select Printer for the output, the utility sends the contents of the file to the printer only. If you select Both for the output, the utility sends the contents of the file to both the screen and the printer.
2. When the utility displays the file on the screen, it displays one screenful at a time and waits for you to press any key before displaying the next screen. You cannot view previous screens. After the last screen press any key to return to the FILE DISPLAY menu.
3. You must have previously saved the file in ASCII format for proper display on the screen or printer.

Example

Default Pathname: A:/

Drive: \_ Volume ID: \_\_\_\_\_

File ID: TAXDATA.FED \_\_\_\_\_

Output:  
\_Screen                    ^ Printer                    \_ Both

This example causes the file TAXDATA.FED on the default drive to be printed.



### 2.3.10 FILE RENAME Utility

### Function

This utility changes the name of a file.

Type

Internal

Prompt

```

SYSTEM UTILITIES - FILE RENAME

Default Pathname: A:/

Current File Spec
Drive: A Volume ID: _____

File ID: _____

New File Spec
Drive: A Volume ID: _____

File ID: _____

EXECUTE - Proceed TAB - Go to New
CANCEL - Return to Menu BACKTAB - Go to Current
RETURN - Go to Next Field

```

Drive            a letter of the alphabet designating a drive

Volume ID      optional; 1 to 11 characters

|         |                                                                                                                                                                                              |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| File ID | a 1-character to 8-character file name, optionally preceded by a path name, optionally followed by a 1-character to 3-character extension; a maximum of 50 characters, including punctuation |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Using the System Utilities



Comments

1. This utility does not copy the file to another disk. If the disk containing the file to be renamed is not on the default drive, you must supply a drive designation.
2. After this utility has executed, the directory referencing the file no longer contains the original file name. If you want to rename a file while retaining a copy under the original name, use the FILE COPY utility.
3. You can use the all-purpose file name characters (?) and (\*) in the file names and extensions. (Refer to Section 1.4.3.) In most cases, using all-purpose characters with the FILE RENAME utility has the same effect as with other utilities. For instance, the following example causes all files in the default directory with the file name TEST to be renamed TESTFILE, with their extensions remaining the same.

|                           |                  |
|---------------------------|------------------|
| Current File Spec         |                  |
| Drive: A                  | Volume ID: _____ |
| File ID: TEST.* _____     |                  |
|                           |                  |
| New File Spec             |                  |
| Drive: A                  | Volume ID: _____ |
| File ID: TESTFILE.* _____ |                  |

4. The FILE RENAME utility also has a special use for all-purpose characters. With them, you can select certain characters from the first file name or extension to be copied to the same position in the second. You do this by including all-purpose characters in the second file name or extension at positions occupied by the characters you want in the first. FILE RENAME then fills the positions occupied by the all-purpose characters with the characters occupying the corresponding positions in the first file name or extension. For example,

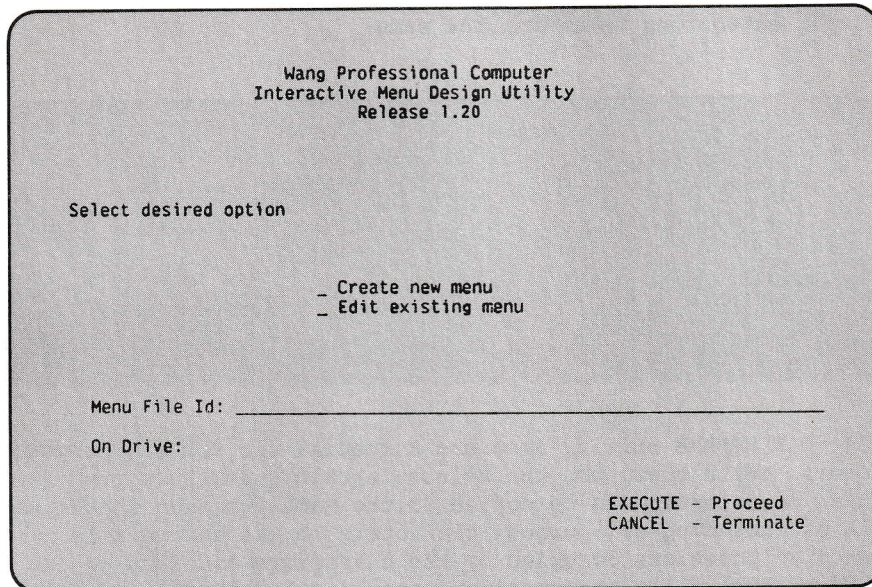
|                             |                  |
|-----------------------------|------------------|
| Current File Spec           |                  |
| Drive: A                    | Volume ID: _____ |
| File ID: TESTFILE.1ST _____ |                  |
|                             |                  |
| New File Spec               |                  |
| Drive: A                    | Volume ID: _____ |
| File ID: *.2nd _____        |                  |

2.3.11 MODIFY SYSTEM MENUS UtilityFunction

This utility modifies existing menus or help screens and creates new menus.

Type

External, System Diskette II

Prompt

```
Wang Professional Computer
Interactive Menu Design Utility
Release 1.20

Select desired option

- Create new menu
- Edit existing menu

Menu File Id: _____
On Drive: _____

EXECUTE - Proceed
CANCEL - Terminate
```

File ID      a 1-character to 8-character file name, optionally  
             followed by a 1-character to 3-character extension

Drive        a letter of the alphabet designating a drive

Using the System Utilities



### Comments

1. This utility creates or edits a file containing the data necessary for the computer to display and execute a menu. The prompt shown above is the first of a series of prompts. The file ID in the first prompt refers to the file to be created or edited. The File ID field must have an entry before you can proceed.

The files which contain existing system menus include the following:

- MENU.DAT - Main System Menu
- APPMENU.DAT - Applications Menu
- UTILITY.DAT - System Utilities Menu
- PRGDMEN.DAT - Program Development Menu
- TCMENU.DAT - Communications Menu
- REDIRMNU.DAT - Printer Support Menu

2. The Drive Designation field in the first prompt allows you to specify the drive on which you edit or create the menu. Refer to Comment 5 for an explanation of how to specify the drive from which you invoke the menu.

3. To move the cursor between fields on the screens displayed by this utility, you can use the TAB and BACK TAB keys in addition to the RETURN key.

4. When you select the Create New Menu option, the following prompt appears:

Wang Professional Computer  
Interactive Menu Design Utility  
Release 1.20

Enter header text of menu,  
to be centered on the first three lines

Line one: \_\_\_\_\_

Line two: \_\_\_\_\_

Line three: \_\_\_\_\_

EXECUTE - Proceed  
CANCEL - Terminate

Your responses to this prompt will appear centered on the first three lines of the new menu. You must make an entry for the first line. The other two lines are optional. You may enter up to 60 characters per line.

Using the System Utilities



5. When you have made your response to the first prompt displayed by the Create New Menu option, a screen with the header you have entered, a highlighted line for entering text, and the following prompt appears.

```

Line 1 of Menu Header
Line 2 of Menu Header
Line 3 of Menu Header

File name: _____ File Extension: ____ On Drive : _
In Directory: _____
Parameters: _____
Module Type: _ Menu _ Program EXECUTE - Accept screen
 _ Other _ System function _ Command.com CANCEL - Cancel operation

```

The File ID fields, which specify the file for the menu selection you create in this step, must have entries before you can proceed. The File type defaults to Menu, unless you specify otherwise.

If you specify a drive designation for the file, the computer will search only that drive when you invoke the file. If you leave the drive designation field blank, the computer will search the current default drive whenever you invoke the file. Therefore, if you wish to be able to invoke the file from any drive, leave the drive designation field blank.

The computer uses the drive specified in this prompt as the default drive for file access until the execution of this menu item ceases. However, if a program invoked by selecting this item changes the default drive while it is executing, the drive it establishes remains in effect when you return to the menu.

In the highlighted text entry field, enter a menu item as you wish it to appear on the new menu. You may enter up to 32 characters per item. The file ID specifies the file the computer will call when you select this menu item. In the file ID field, enter a 1-character to 8-character file name with an optional 1-character to 3-character extension. For the file type, move the acceptance block to one of the options shown: Menu for a menu file, Command.com for the DOS Command Processor, Other if the item on the menu is Other, and Program for any other program. System Function is not for general use, and is usually only used by the PC system designers.

When you press the EXEC key, the Work Screen (described in Comment 8) along with the menu headers appears.

#### Using the System Utilities



6. When you invoke the menu you have created, the following messages automatically appear in the bottom righthand corner of the menu:

```
SPACE BAR - Item select
EXECUTE - Proceed
CANCEL - Previous Menu
```

7. In order to use a menu you have created, you must call it from an already existing menu. Therefore you must first add the name of the new menu to an old menu. To do this, return to the original prompt displayed by this utility and select the Edit Existing Menu option.

8. If you select Edit Existing Menu from the original prompt displayed by this utility, or if you have supplied the first item on a newly created menu, the Work Screen along with the existing menu appears on the monitor. The header of the Work Screen will be the same as the header of the existing menu or the header of the newly created menu. The options from the menu you are editing or the option you have already entered on the new menu appears in the middle of the Work Screen.

The bottom lefthand corner of the Work Screen contains a menu from which you can select the function you wish to perform. The Work Screen menu appears as follows:

```
Line 1 of Menu Header
Line 2 of Menu Header
Line 3 of Menu Header
```

```
- Existing Menu Entry
- Existing Menu Entry
- Existing Menu Entry
```

```
- Add new entry
- Edit
- Reorder
```

```
- Delete
- Edit header
- Edit help screen
```

```
EXECUTE - Select operation
CANCEL - End/Update menu
```

Move the acceptance block to the function you want. The following comments explain each of these functions.

Using the System Utilities

Use the Add new entry function to add an item to a menu. First move the cursor next to the item on the menu immediately above the line on which you want the new item to appear. Then, select Add New Entry. A highlighted line for entering text appears on the line below the acceptance block, and the items already below the acceptance block move down one line. The prompt described in Comment 5 also appears. Enter text and respond to the prompt as indicated in that comment. When you have finished adding your new entry, the Work Screen menu reappears.

Use the Edit function to modify an item on a menu. First move the cursor next to the item you wish to modify and then select Edit. The item you have chosen to edit becomes highlighted. The prompt described in Comment 5 also appears, with the current values highlighted. Highlighting indicates that you can change those values. Respond to the prompt as indicated in Comment 5. When you have finished editing the selected item, the Work Screen menu reappears.

The Reorder function allows you to alter the order in which items appear on the menu you are modifying. First move the cursor next to the item you want to move and then select Reorder. Pressing the North or South cursor control key moves the item up or down.

Use the Delete function to remove an item from the menu you are modifying. First move the cursor next to the item you want to remove and then select Delete. Before deleting the item, the utility protects you against an accidental deletion by prompting you to press the EXEC key if you want to delete. When you press the EXEC key, the utility deletes the item, reformats the remaining items, and returns to the Work Screen.

Use the Edit header function to modify the header displayed on the Work Screen. When you select this option, the prompt described in Comment 4 appears on the monitor. Respond to this prompt as indicated in that comment.



Example

The following is an example of a menu that you can create using this utility:

ACCOUNTS PAYABLE MENU

Select an Item and Proceed

- Vendors
- Taxes
- Payroll
- Pensions
- Other

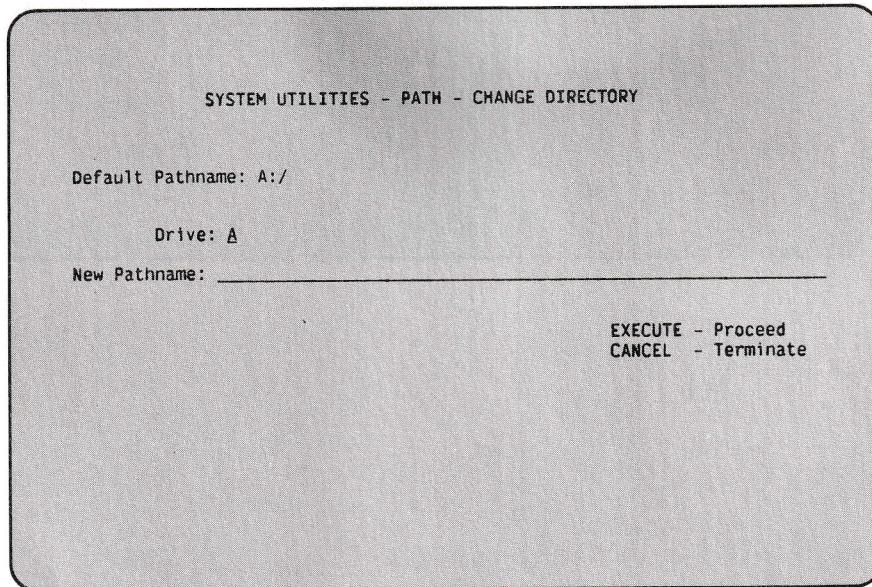
SPACE BAR - Item select  
EXECUTE - Proceed  
CANCEL - Previous Menu

2.3.12 PATH - CHANGE DIRECTORY UtilityFunction

This utility allows you to specify or change the default directory used by the computer for file searches.

Type

Internal

Prompt

SYSTEM UTILITIES - PATH - CHANGE DIRECTORY

Default Pathname: A:/

Drive: A

New Pathname: \_\_\_\_\_

EXECUTE - Proceed  
CANCEL - Terminate

|          |                                                                                                                                                                                                                                                               |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Drive    | a letter of the alphabet designating a drive                                                                                                                                                                                                                  |
| Pathname | a slash representing the disk directory followed by one or more subdirectory names separated by slashes; optionally preceded by a drive designation; a maximum of 8 characters per subdirectory name; path name a maximum of 50 characters, including slashes |

Using the System Utilities

Comments

1. The path name you specify with this utility remains the default path name until you change it by using this utility again or restarting the system. The disk directory is the default path.
2. The displayed path name is the current default. To leave the default path name unchanged, press EXEC or CANCEL without entering anything for the New Pathname.
3. Because the path name must begin from the disk directory, you cannot use the special character .. to bypass naming the directory.
4. Refer to Section 1.5 for a detailed explanation of path names.

Example

Default Pathname: A:/

Drive: A

New Pathname: /PAYDATA/SALARY/BONUSES\_\_\_\_\_



2.3.13 PATH - MAKE DIRECTORY UtilityFunction

This utility creates a new subdirectory.

Type

Internal

Prompt

A screenshot of a terminal window titled "SYSTEM UTILITIES - PATH - MAKE DIRECTORY". The window has a light gray background. It displays the following text: "Default Pathname: A:/", "Drive: A", and "Create Pathname: " followed by a horizontal line for input. In the bottom right corner, there are two options: "EXECUTE - Proceed" and "CANCEL - Return to Menu".

|          |                                                                                                                                                                                                                                                                |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Drive    | a letter of the alphabet designating a drive                                                                                                                                                                                                                   |
| Pathname | a slash representing the disk directory, followed by one or more subdirectory names separated by slashes; optionally preceded by a drive designation; a maximum of 8 characters per subdirectory name; path name a maximum of 50 characters, including slashes |

Using the System Utilities

Comments

1. The name following the last slash in the path name designates the subdirectory to be created. PATH - MAKE DIRECTORY creates a file in the directory format and enters its name, location, and the time and date of creation in the directory that precedes the new subdirectory in the path.
2. The names in a directory must be unique. Therefore, PATH - MAKE DIRECTORY cannot create a subdirectory if the directory containing the subdirectory already has an entry with that name.
3. Subdirectories can have as many entries as the space available on the disk allows.
4. The path name you enter must begin from the disk directory.
5. Refer to Section 1.5 for a detailed explanation of path names.

Example

Default Pathname: A:/

Drive: A

Create Pathname: /TAXINDEX \_\_\_\_\_

This example causes PATH - MAKE DIRECTORY to create a subdirectory named TAXINDEX and list it in the disk directory.

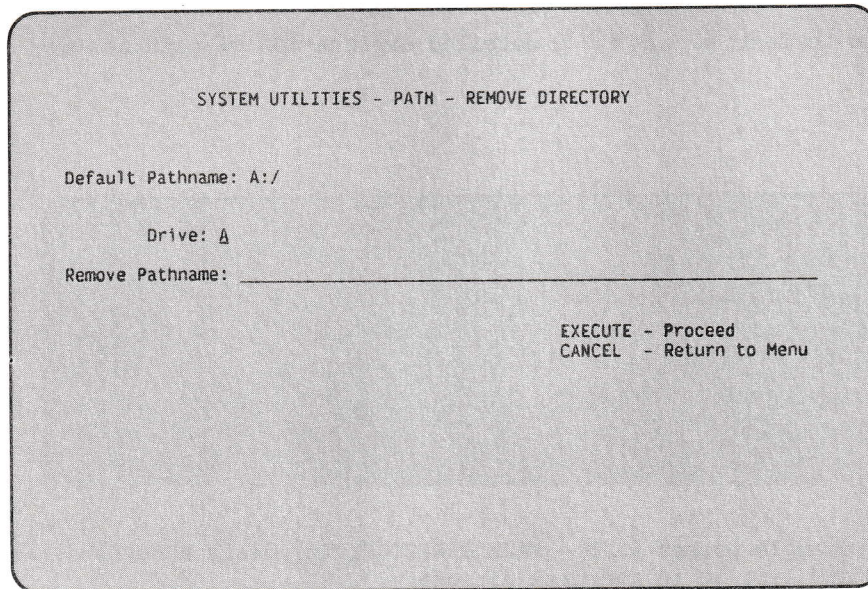


2.3.14 PATH - REMOVE DIRECTORY UtilityFunction

This utility removes an empty subdirectory from a disk.

Type

Internal

Prompt

SYSTEM UTILITIES - PATH - REMOVE DIRECTORY

Default Pathname: A:/

Drive: A

Remove Pathname: \_\_\_\_\_

EXECUTE - Proceed  
CANCEL - Return to Menu

|          |                                                                                                                                                                                                                                                                |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Drive    | a letter of the alphabet designating a drive                                                                                                                                                                                                                   |
| Pathname | a slash representing the disk directory, followed by one or more subdirectory names separated by slashes; optionally preceded by a drive designation; a maximum of 8 characters per subdirectory name; path name a maximum of 50 characters, including slashes |

Using the System Utilities



### Comments

1. This utility deletes the subdirectory whose name follows the last slash in the path name. The subdirectory is erased from the disk, and its entry is deleted from the directory that immediately precedes it in the path.
2. The subdirectory must be empty before you can remove it. A subdirectory is empty if it contains no entries for files subsequent to it. However, a subdirectory having no subsequent files continues to exist because it contains an entry for the preceding directory (the special character ..). It is good practice to remove subdirectories when they become empty since they take up space on the disk and in the preceding directory.
3. You cannot remove the disk directory with this utility. To delete an old disk directory and initialize a new one, use the DISK FORMAT utility.
4. The path name you enter must begin from the disk directory.
5. Refer to Section 1.5 for a detailed explanation of path names.

### Example

Default Pathname: A:/

Drive: A

Remove Pathname: /MY-INDEX/BILLS/TAXES/FOREIGN\_\_\_\_\_

This example causes the computer to remove the subdirectory FOREIGN from the disk and from its preceding directory, TAXES.

2.3.15 PATH - SELECT ALTERNATES UtilityFunction

This utility defines the directories that are searched when a referenced file is not found in either the default directory or in the directory designated in the file specification. Optionally, this utility displays the current alternate path names.

Type

Internal

Prompt

SYSTEM UTILITIES - PATH - SELECT ALTERNATE

Default Pathname: A:/

Alt. Pathname: \_\_\_\_\_

Alt. Pathname: \_\_\_\_\_

Alt. Pathname: \_\_\_\_\_

Alt. Pathname: \_\_\_\_\_

Alt. Pathname: \_\_\_\_\_

More Alternates Required? (Yes/No) **N**

EXECUTE - Proceed  
CANCEL - Return to Menu  
RETURN - Go to Next Field

Pathname      a slash representing the disk directory, followed by one or more subdirectory names separated by slashes; optionally preceded by a drive designation; a maximum of 8 characters per subdirectory name; path name a maximum of 50 characters, including slashes

## Using the System Utilities

Comments

1. If no alternate paths are in effect, the computer searches for the file specified in a file ID along one path only, the default path or the path you enter in the file ID. This utility instructs the computer to search other paths if it does not find the file on the first path. The alternate paths you define with this utility remain in effect until you use this utility again or restart your system.
2. Each path name entered must begin from the disk directory.
3. If a file ID includes a path name, the computer searches for a file with the name or name and extension that appear after the last slash in the file ID. The computer searches the alternate paths in the order in which you enter them. When it finds a specified file name or extended file name on a path, it stops searching. Therefore, if there are files with duplicate names and extensions on different paths, only one of the files will be found.
4. If you respond to the "More Alternates Required?" prompt with Y, prompts for additional alternate path names appear on the screen when you press the EXEC key. The PATH - SELECT ALTERNATES utility does not execute until you respond to "More Alternates Required?" with N.
5. You may enter a single semicolon instead of a path name. This instructs the computer to search only the default directory.
6. Entering no path names and pressing EXEC causes the current alternate path names to appear on the screen.
7. If you want a new default path directory to be in effect every time you start the system, then you have to change the following command in CONFIG.SYS:

```
SHELL = /MENU DRV.R.COM -N001 -P/BIN
```

Use the Wang PC Editor (see Chapter 3) to change the path names after the -P portion from the default alternative BIN (as shipped by Wang Laboratories, Inc.) to those you select. Separate the path names by semicolons. The alternate paths you specify remain in effect until you change them using this utility.

**CAUTION:**

Be very careful if you modify CONFIG.SYS. If you make a mistake, you may not be able to start your system. Always keep copies of the system files with the original CONFIG.SYS.

8. Refer to Section 1.5 for a detailed explanation of path names.



Example

Default Pathname: A:/

Alt. Pathname: A:/JOESFILES/TAXDATA\_\_\_\_\_

Alt. Pathname: A:/ANNSFILES/TAXDATA\_\_\_\_\_

Alt. Pathname: B:/COMPTROL/JOESFILES/TAXDATA\_\_\_\_\_

Alt. Pathname: B:/COMPTROL/ANNSFILES/TAXDATA\_\_\_\_\_

Alt. Pathname: \_\_\_\_\_

More Alternates Required? (Yes/No) N

This example instructs the computer to search two paths on Drive A and two on Drive B.

## Using the System Utilities

### 2.3.16 SET DATE Utility

#### Function

This utility displays the current date, as known to the computer, and allows you to change it. Setting this date resets the calendar that records when files are created and modified.

#### Type

Internal

#### Prompt

```

 SYSTEM UTILITIES - SET DATE

Current Date: mm/dd/yy New Date: _ _/_ _/_ _

EXECUTE - Proceed TAB - Next Entry
CANCEL - Return to Menu BACKTAB - Prev Entry
EAST/WEST - Next/Prev Char BACKSPACE - Destruct Prev
```

#### Comments

1. The format of the Current Date display is determined by the SET NATIONAL DEFAULTS utility. (Refer to Section 2.3.19.) You must enter the new date in the same format. The remaining comments assume the United States format (month/day/year) is in effect.

2. You must enter the date using numerals only, not letters. For the month, enter two digits from 01 to 12. For the day, enter two digits from 01 to 31. For the year, enter two digits from 80 to 99.
3. To leave the date unchanged, enter nothing in the New Date field and press EXEC or CANCEL.
4. If you enter an invalid date, one of three error messages appears (Invalid Month, Invalid Day, or Invalid Year) informing you that you have entered an invalid day, month, or year. Respond by entering an allowable value and press EXEC.
5. The message "Change(s) completed" is displayed to inform you that the new date has been set.

Example

|                        |                    |
|------------------------|--------------------|
| Current Date: mm/dd/yy | New Date: 02/12/83 |
|------------------------|--------------------|



### 2.3.17 SET DEFAULT DRIVE Utility

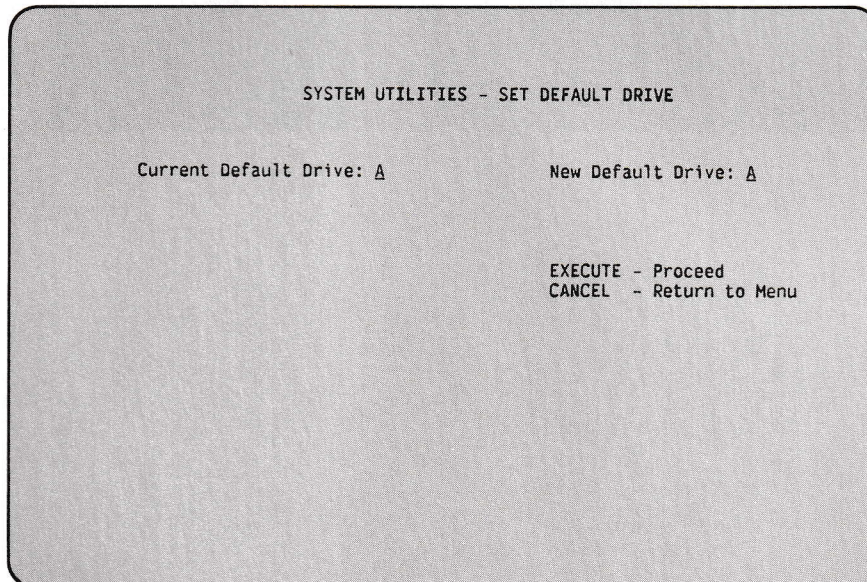
#### Function

This utility allows you to change the default disk drive by typing in a new drive designation. The drive you specify remains the default drive until you restart the system or use this utility again.

#### Type

Internal

#### Prompt

A screenshot of a computer screen displaying the 'SYSTEM UTILITIES - SET DEFAULT DRIVE' utility. The screen has a dark background with light-colored text. At the top, it says 'SYSTEM UTILITIES - SET DEFAULT DRIVE'. Below that, there are two labels: 'Current Default Drive: A' and 'New Default Drive: A'. At the bottom right, there are two options: 'EXECUTE - Proceed' and 'CANCEL - Return to Menu'.

SYSTEM UTILITIES - SET DEFAULT DRIVE

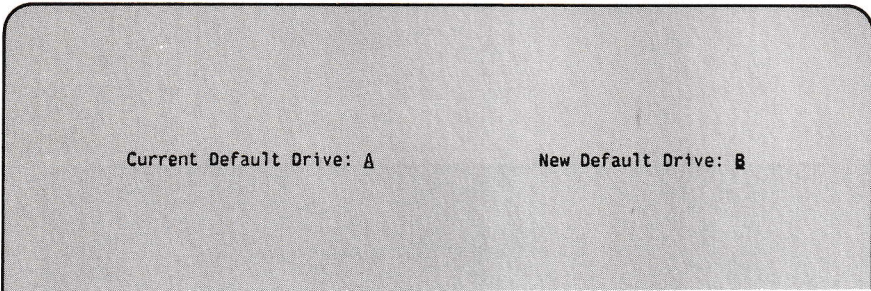
Current Default Drive: A      New Default Drive: A

EXECUTE - Proceed  
CANCEL - Return to Menu

Drive      a letter of the alphabet designating a drive

Comments

1. Refer to Section 1.3, The Drive Designation Parameter.
2. After you enter a new default drive, and press the EXEC key, the message "Change(s) completed" appears which informs you that the new default drive is set.

Example

Current Default Drive: A

New Default Drive: B

### 2.3.18 SET KEYBOARD OPTIONS Utility

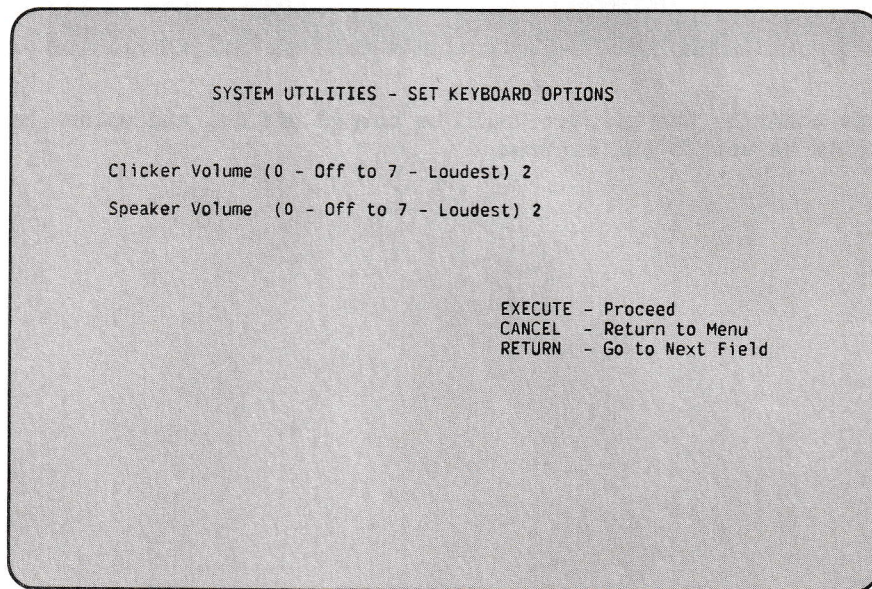
#### Function

This utility allows you to set the volume for the keyboard click and speaker.

#### Type

Internal

#### Prompt



```
SYSTEM UTILITIES - SET KEYBOARD OPTIONS

Clicker Volume (0 - Off to 7 - Loudest) 2
Speaker Volume (0 - Off to 7 - Loudest) 2

EXECUTE - Proceed
CANCEL - Return to Menu
RETURN - Go to Next Field
```

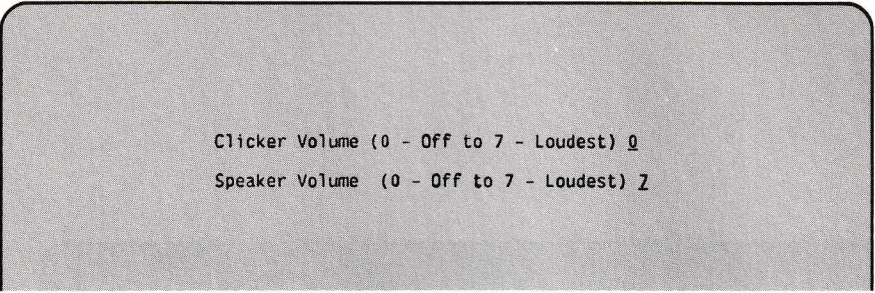
#### Comments

1. The Clicker sets the volume of the sound emitted when you press the keys. The Speaker sets the volume of the keyboard speaker.
2. Respond to both prompts by entering a digit from 0 to 7 and pressing EXEC. 0 turns the volume off. The volume increases as the value of the digit ascends to a maximum of 7.



3. The message "Change(s) completed" appears to inform you that the new volumes for the clicker and speaker are set.

Example



Clicker Volume (0 - Off to 7 - Loudest) 0  
Speaker Volume (0 - Off to 7 - Loudest) 7

In this example, the clicker would be turned off and the volume of the speaker would be set to the maximum.

### 2.3.19 SET NATIONAL DEFAULTS Utility

#### Function

This utility sets the default values for various parameters as they are used in different countries.

#### Type

Internal

#### Prompt

```

SYSTEM UTILITIES - SET NATIONAL DEFAULT

- United States - Denmark
- Canada - Finland
- Latin America - Norway
- Venezuela - Sweden
- United Kingdom - Iceland
- Germany - Spain
- France - Portugal
- Austria - Turkey
- Netherlands - Greece
- Belgium - Cyprus
- Italy - South Africa
- Switzerland - General Definition

BACKSPACE / SPACE - Item Select
EXECUTE - Proceed
CANCEL - Return to Menu

```

#### Comments

1. Table 2-1 lists the parameters this utility sets and their corresponding values for various countries.
2. This utility establishes defaults that all subsequent programs use until the defaults are changed by this utility or until you restart your system. As shipped by Wang Laboratories, Inc., the defaults established at system start-up are the United States standards. Refer to Comment 7 for an explanation of how to change the start-up defaults.
3. The country whose standards are currently in effect on your system appears highlighted in the prompt.

Using the System Utilities

4. This utility establishes one of the following three date formats as the default:

|                   |          |
|-------------------|----------|
| American standard | mm/dd/yy |
| European standard | dd/mm/yy |
| Swedish standard  | yy/mm/dd |

The SET DATE utility uses the format you select with the SET NATIONAL DEFAULTS utility.

5. The General Definition option allows the programmer to design his own standards. For this, the Debugger program development tool must be used to modify the MS-DOS code. (Refer to The Wang Professional Computer Program Development Guide.) When MS-DOS has been appropriately modified, selecting General Definition from the SET NATIONAL DEFAULTS menu establishes the standards you create as the default values. As shipped by Wang Laboratories, Inc., the General Definition option supplies the values listed at the end of Table 2-1 under General Definition.

6. The currency symbol you select appears on the screen when the program you are running calls for it. The currency symbol that appears in printouts depends on the character set of the printer you are using. Refer to your printer manual.

7. To change the default values established at system start-up, you must use the Wang PC Editor to modify the file on the system diskette named CONFIG.SYS. You can modify it in one of two ways. You can add the command COUNTRY = #, where # represents the country code listed in Table 2-1. You can also modify the SHELL = <filespec> command by adding a space and -N# after the file specification. The COUNTRY = # command may not accept values greater than 99.

#### CAUTION:

Be very careful if you modify CONFIG.SYS. If you make a mistake, you may not be able to start your system. Always keep copies of the system files with the original CONFIG.SYS file.

8. The following explanations apply to entries in Table 2-1:

- The Currency Symbol Position can be before the amount with a space in between, before the amount with no space in between, after the amount with a space in between, or after the amount with no space in between.
- The Currency Decimal Positions are the number of decimal positions used in currency expressions.
- 12/24 Hours indicates whether the hour is designated 1 to 12 or 0 to 23.

#### Using the System Utilities



- The Data Separator is the punctuation mark used by programs as the divider in lists of data.

9. The message "Change(s) completed" is displayed to inform you that the new national standards are in effect.

Table 2-1. National Default Values

| Country                    | Austria               | Belgium             | Canada              | Cyprus              |
|----------------------------|-----------------------|---------------------|---------------------|---------------------|
| Code                       | 103                   | 105                 | 10                  | 121                 |
| Date/Time Format           | European              | European            | European            | European            |
| Date Separator             | .                     | -                   | -                   | -                   |
| Time Separator             | :                     | :                   | :                   | :                   |
| Currency Symbol            | S                     | \$                  | \$                  | \$                  |
| Currency Symbol Position   | Before,<br>with space | Before,<br>no space | Before,<br>no space | Before,<br>no space |
| Currency Decimal Positions | 2                     | 2                   | 2                   | 2                   |
| 1000 Separator             | .                     | .                   | ,                   | .                   |
| Decimal Separator          | ,                     | ,                   | .                   | ,                   |
| 12/24 Hours                | 24                    | 24                  | 24                  | 24                  |
| Data Separator             | ;                     | ;                   | ,                   | ;                   |

Using the System Utilities

Table 2-1. National Default Values(continued)

| Country                    | Denmark             | Finland             | France               | Germany              |
|----------------------------|---------------------|---------------------|----------------------|----------------------|
| Code                       | 110                 | 111                 | 102                  | 101                  |
| Date/Time Format           | European            | European            | European             | European             |
| Date Separator             | .                   | -                   | /                    | .                    |
| Time Separator             | .                   | :                   | :                    | .                    |
| Currency Symbol            | KR                  | \$                  | F                    | DM                   |
| Currency Symbol Position   | Before,<br>no space | Before,<br>no space | After,<br>with space | After,<br>with space |
| Currency Decimal Positions | 2                   | 2                   | 2                    | 2                    |
| 1000 Separator             | .                   | .                   | .                    | .                    |
| Decimal Separator          | ,                   | ,                   | ,                    | ,                    |
| 12/24 Hours                | 24                  | 24                  | 24                   | 24                   |
| Data Separator             | ;                   | ;                   | ;                    | ;                    |

Using the System Utilities



Table 2-1. National Default Values (continued)

| Country                    | Greece               | Iceland               | Italy               | Latin America       |
|----------------------------|----------------------|-----------------------|---------------------|---------------------|
| Code                       | 120                  | 114                   | 106                 | 20                  |
| Date/Time Format           | European             | European              | European            | European            |
| Date Separator             | /                    | .                     | -                   | /                   |
| Time Separator             | :                    | :                     | :                   | :                   |
| Currency Symbol            | DRS                  | kr                    | \$                  | \$                  |
| Currency Symbol Position   | After,<br>with space | Before,<br>with space | Before,<br>no space | Before,<br>no space |
| Currency Decimal Positions | 2                    | 2                     | 2                   | 2                   |
| 1000 Separator             | .                    | .                     | .                   | .                   |
| Decimal Separator          | ,                    | ,                     | ,                   | ,                   |
| 12/24 Hours                | 24                   | 24                    | 24                  | 24                  |
| Data Separator             | ;                    | ;                     | ;                   | ;                   |

Using the System Utilities

Table 2-1. National Default Values (continued)

| Country                    | Netherlands         | Norway              | Portugal            | South Africa        |
|----------------------------|---------------------|---------------------|---------------------|---------------------|
| Code                       | 104                 | 112                 | 116                 | 201                 |
| Date/Time Format           | European            | European            | European            | European            |
| Date Separator             | -                   | .                   | -                   | /                   |
| Time Separator             | :                   | .                   | :                   | :                   |
| Currency Symbol            | \$                  | KR                  | \$                  | R                   |
| Currency Symbol Position   | Before,<br>no space | Before,<br>no space | Before,<br>no space | Before,<br>no space |
| Currency Decimal Positions | 2                   | 2                   | 2                   | 2                   |
| 1000 Separator             | .                   | .                   | .                   | a space             |
| Decimal Separator          | ,                   | ,                   | ,                   | ,                   |
| 12/24 Hours                | 24                  | 24                  | 24                  | 24                  |
| Data Separator             | ;                   | ;                   | ;                   | ;                   |

Using the System Utilities

Table 2-1. National Default Values (continued)

| Country                    | Spain               | Sweden              | Switzerland         | Turkey              |
|----------------------------|---------------------|---------------------|---------------------|---------------------|
| Code                       | 115                 | 113                 | 107                 | 117                 |
| Date/Time Format           | European            | Swedish             | European            | European            |
| Date Separator             | /                   | -                   | .                   | -                   |
| Time Separator             | :                   | :                   | :                   | :                   |
| Currency Symbol            | Pts                 | SEK                 | SFR                 | \$                  |
| Currency Symbol Position   | Before,<br>no space | Before,<br>no space | Before,<br>no space | Before,<br>no space |
| Currency Decimal Positions | 2                   | 2                   | 2                   | 2                   |
| 1000 Separator             | .                   | .                   | '                   | .                   |
| Decimal Separator          | ,                   | a space             | .                   | ,                   |
| 12/24 Hours                | 24                  | 24                  | 24                  | 24                  |
| Data Separator             | ;                   | ;                   | ;                   | ;                   |

Using the System Utilities



Table 2-1. National Default Values (continued)

| Country                    | United Kingdom      | United States       | Venezuela           | General Definition  |
|----------------------------|---------------------|---------------------|---------------------|---------------------|
| Code                       | 100                 | 1                   | 21                  | 255                 |
| Date/Time Format           | European            | American            | European            | European            |
| Date Separator             | /                   | /                   | /                   | -                   |
| Time Separator             | :                   | :                   | :                   | :                   |
| Currency Symbol            | \$                  | \$                  | Bs                  | \$                  |
| Currency Symbol Position   | Before,<br>no space | Before,<br>no space | Before,<br>no space | Before,<br>no space |
| Currency Decimal Positions | 2                   | 2                   | 2                   | 2                   |
| 1000 Separator             | .                   | ,                   | .                   | .                   |
| Decimal Separator          | ,                   | .                   | ,                   | ,                   |
| 12/24 Hours                | 24                  | 24                  | 24                  | 24                  |
| Data Separator             | ;                   | ,                   | ;                   | ;                   |

Using the System Utilities

### 2.3.20 SET TIME Utility

#### Function

This utility displays the current time, as known to the computer, and allows you to change it. Setting this time resets the internal clock that records when files are created and updated.

#### Type

Internal

#### Prompt

```

 SYSTEM UTILITES - SET TIME

Current Time: hh:mm:ss New Time: __:__:__

EXECUTE - Proceed TAB - Next Entry
CANCEL - Return to Menu BACKTAB - Prev Entry
EAST/WEST - Next/Prev Char BACKSPACE - Destruct Prev
```

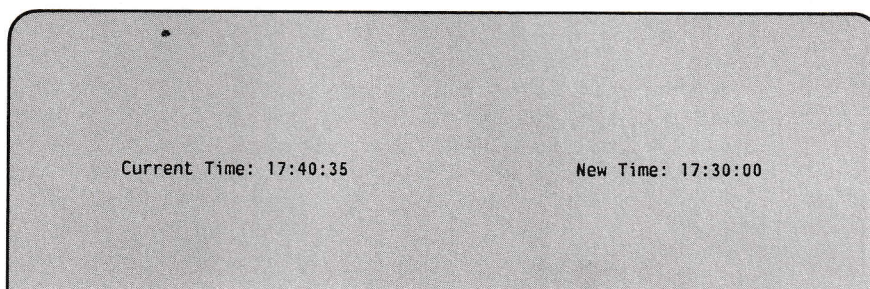
#### Comments

1. The format of the Current Time display is determined by the SET NATIONAL DEFAULTS utility. (Refer to Section 2.3.19.) You must enter the new time in the same format. The remaining comments on this utility assume the United States format (hour:minute:second) is in effect.
2. You must enter the time using numerals only, not letters. Enter the numbers in 2-digit form; for example, 1 is 01.

#### Using the System Utilities

3. Enter the time values in the hour:minute:second format. The seconds entry is optional. The minute and second entries must be numbers between 00 and 59. The hour must be a number between 00 and 23. 12 midnight is 00; 12 noon is 12. To translate afternoon times other than noon from the standard clock to the 24-hour clock, add 12 to the hour on the standard clock. For example, 1 pm on the standard clock becomes hour 13 on the 24-hour clock, 2 pm on the standard clock becomes hour 14 on the 24-hour clock, and so on.
4. To leave the time unchanged, leave the New Time field blank and press EXEC or CANCEL.
5. If you enter an invalid time, one of three errors messages (Invalid Hour, Invalid Minute, or Invalid Second) appears informing you that you have entered an invalid hour, minute, or second. Enter an allowable value and press EXEC.
6. The message "Change(s) completed" appears to inform you that the new time is set.

Example



Current Time: 17:40:35                      New Time: 17:30:00



### 2.3.21 WINCHESTER BACKUP Utility

#### Function

This utility creates a backup copy of the Winchester disk or a portion of the Winchester disk; it automatically formats the output diskettes used for the backup.

#### Type

External, on a separate diskette

#### Prompt

SYSTEM UTILITIES - WINCHESTER BACKUP

INPUT OPTIONS:

Directory: \_\_\_\_\_

Sub-Directories?: (Yes/No) N

Modified Files Only?: (Yes/No) N

OUTPUT:

Drive: A

EXECUTE - Proceed  
CANCEL - Return to Menu  
RETURN - Go to Next Field

Directory      optional; a slash representing the disk directory, followed by one or more subdirectory names separated by slashes; a maximum of 8 characters per subdirectory name; path name a maximum of 50 characters, including slashes

#### Using the System Utilities

Comments

1. If you do not specify a directory, the utility creates copies of the entries in the default directory.
2. If you respond to the Subdirectories prompt with Yes, the utility creates copies of every entry on every path that begins from the directory you selected, including hidden files. (Refer to Section 1.8 for details on hidden files.) If you selected the default directory, the utility copies every file on the Winchester disk. If you respond to the Subdirectories prompt with No, the utility creates copies only of the entries in the directory you selected.
3. If you respond to the Modified Files Only prompt with Yes, this utility makes copies only of those files in the selected directories that were modified since the last time you used the utility. The system records file creation and modification automatically regardless of the date and time that you enter when you start the system. Therefore, you are not required to enter the date and time each time you start the system to ensure accurate backup of modified files.
4. The format used by this utility on the output diskettes is not the standard DOS format. Therefore, you cannot access Winchester backup files from the diskette. The only way to use them is to restore them to the Winchester disk using the WINCHESTER RESTORE utility (see Section 2.3.22) and then access them from the disk. You can copy the complete backup diskette to another diskette using DISK COPY (see Section 2.3.3), but you will still be unable to access individual files directly from the diskette.
5. You can only back up files by directories and subdirectories; you cannot make copies of individual files with this utility. If you want to make copies of single files, use the FILE COPY utility. (See Section 2.3.6.)
6. The maximum number of files that you can back up at one time is 800. If you have more than 800 files, a message appears before BACKUP begins informing you that the maximum file number has been exceeded. The only way to back up more than 800 files is to run BACKUP more than once and specify only a limited number of directories and subdirectories for each run.
7. The system prompts you to insert backup diskettes as necessary. You do not have to format these diskettes before you use them with this utility. You may want to write-protect the backup diskettes by placing a tab over the hole in the diskette to ensure that these files cannot be overwritten or changed by mistake. For the first diskette, the following message appears:

Insert first output backup diskette in Drive A:  
Press any key to continue



You can press any key on the keyboard to initiate backup, except the CANCEL key. Pressing CANCEL terminates the utility. If the utility uses up the space on a diskette before completing the backup, it prompts you to insert a new diskette to continue the backup, as follows:

Remove backup diskette in Drive A:  
Insert next output backup diskette in Drive A:  
Press any key to continue

Again, you can press any of the keys on the keyboard except the CANCEL key. As the utility proceeds with formatting the diskette and copying files, it displays on the screen the status of the format when formatting, as well as each file it is copying as it copies.

8. You can cancel the utility at any time by pressing CANCEL. If you press CANCEL while the utility is in the middle of a BACKUP, the files that it has copied may not be accurate. Therefore, you should run BACKUP again from the beginning to ensure accuracy.

#### Example

This example copies the entries in subdirectory BIN and every entry on the paths that begin from BIN to the diskette in Drive A.

```
INPUT OPTIONS:
Directory: /BIN
Sub-Directories?: (Yes/No) Y
Modified Files Only?: (Yes/No) N

OUTPUT:
Drive: A
```



### 2.3.22 WINCHESTER RESTORE Utility

#### Function

This utility copies files created by the WINCHESTER BACKUP utility from a diskette onto the Winchester disk.

#### Type

External, on a separate diskette

#### Prompt

SYSTEM UTILITIES - WINCHESTER RESTORE

Input:

Drive: A

File ID: \_\_\_\_\_

Output Options

Protect Modified and Read-only Files:

\_ Prompt                      \_ Bypass                      \_ Restore

Write Verify:

\_ On                                      \_ Off

RETURN - Go to Next Field

EXECUTE - Proceed

CANCEL - Return to Menu

Drive                      a letter of the alphabet designating a drive

File ID                      optional; a 1-character to 8-character file name, optionally preceded by a path name, optionally followed by a 1-character to 3-character extension; a maximum of 50 characters, including punctuation

Using the System Utilities

### Comments

1. This utility overwrites files on the Winchester disk with the same file IDs on the backup diskettes. If the backup diskette contains directories, subdirectories, or files that are not on the Winchester disk, then those files are created automatically on the Winchester disk. Therefore, if you delete or lose files on the Winchester, they can be replaced by using the backup files on diskette.

2. You have the choice to overwrite selected files by using one of the Output options under Modified and Read-Only files. Modified files are those which you modified between BACKUPS. The BACKUP utility automatically marks those files as modified files. Read-Only files are files which you can use, but cannot access or modify. If you select Prompt, the system lists all Modified and Read-Only files and allows you to select file-by-file which ones you want to overwrite. If you select Bypass, none of the Modified and Read-Only files are restored. If you select Restore, all Modified and Read-Only files are restored.

The screen below appears after you have selected an Output option and pressed EXECUTE to invoke the utility.

**SYSTEM UTILITIES - WINCHESTER RESTORE**

Release 1.20

|                          |                          |
|--------------------------|--------------------------|
| Date of Backup: mm/dd/yy | Time of Backup: hh:mm:ss |
| Diskette of              | Number of Files:         |

Select Files to be Restored

|            |  |
|------------|--|
| - File ID: |  |
| - File ID: |  |
| - File ID: |  |
| - File ID: |  |
| - File ID: |  |
| - File ID: |  |
| - File ID: |  |
| - File ID: |  |
| - File ID: |  |
| - File ID: |  |
| - File ID: |  |
| - File ID: |  |

|                                      |                                                                    |
|--------------------------------------|--------------------------------------------------------------------|
| INSERT - Select<br>DELETE - Deselect | NEXT - Next Screen<br>EXECUTE - Proceed<br>CANCEL - Return to Menu |
|--------------------------------------|--------------------------------------------------------------------|

3. The system highlights all the files on the screen. All files highlighted will be restored. Therefore, if you do not want to restore a file, you can deselect it by moving the cursor (using the space bar) next to the file and then pressing DELETE. The highlighting disappears, and it is no longer included for restoration. To select a file, press INSERT. To view the next screen, press NEXT, and to view the last screen press SHIFT and NEXT simultaneously. To view the previous screen, press PREV and to view the first screen, press SHIFT and PREV simultaneously.

### Using the System Utilities



To select all the files specified by your response to the File ID prompt on the first screen, press SHIFT and INSERT simultaneously. If you press SHIFT and DELETE simultaneously all the files specified in the File ID prompt are deselected. If you wish, you can then use INSERT to individually select files.

You do not have to restore the files in the same order in which you backed them up. The system has a complete listing of all files that were backed up and can initiate RESTORE at any point.

When you have selected the appropriate files from the listing, press EXECUTE to start the overwrite. The system displays a message informing you how many files you selected and asks you if you want to continue. If so, press EXECUTE; if not, press CANCEL and you can start your selection procedure again.

4. Once you have initiated the RESTORE, the system prompts you for the diskettes holding the files you have selected. It also maintains a display showing the status of RESTORE with messages on the screen as follows:

Total Files Selected:  
Total Files Bypassed:  
Total Files Restored:

5. If you select Write Verify On, the computer compares the copy it creates on the Winchester disk to the file on the diskette and informs you if an error has occurred. If you select Write Verify Off, the accuracy of the restored files cannot be guaranteed.

6. You can respond to the File ID prompt with a path name, a file ID, or by leaving it blank. If you enter a file ID, the utility restores that file only. If you enter a path name, the next screen displays the names of each file in each subdirectory on that path. If you leave the response field blank, the next screen displays the names of all the files that WINCHESTER BACKUP copied. In both cases, you can then select the files you want to restore from the files displayed on the screen in the same way as described above. If you entered a path name, all the files in the display are selected for restoration by default. If you left the response field blank, none of the files are selected by default. If you entered a file ID or path name that does not exist on the backup diskettes, RESTORE automatically creates a file or path under the name you specified. However, those files or paths are empty.



7. You can terminate the utility before it is complete by pressing CANCEL. The utility finishes restoring the file it was working on when you cancelled. Therefore, all files that have been restored up to the point of cancellation are accurate, and do not require a repeat restoration. You can continue RESTORE by specifying the files following the one at cancellation.

#### Example

This example would direct all backup diskettes to be read from Drive A and would restore all Modified and Read-Only files. It would also activate the Write Verify option.

```
Input:
 Drive: A
 File ID: _____

Output Options
Protect Modified and Read-only Files:
 _ Prompt _ Bypass * Restore

Write Verify:
 * On _ Off

RETURN - Go to Next Field
EXECUTE - Proceed
CANCEL - Return to Menu
```

### 2.3.23 WRITE VERIFY Utility

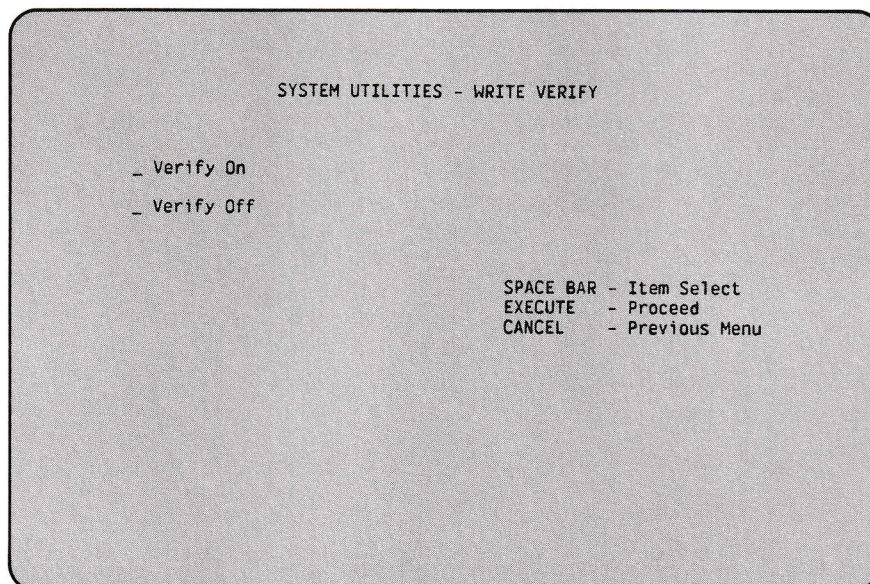
#### Function

This utility compares input to output when the computer creates, modifies, or copies files.

#### Type

Internal

#### Prompt



#### Comments

1. If you select Verify On, the computer compares the output of all writes to disk files (e.g., by the COPY utility) against the original input. The comparison takes place as soon as the write finishes.
2. You turn the WRITE VERIFY utility on or off by placing the acceptance block next to the field you want and pressing EXEC. When the prompt for the WRITE VERIFY utility appears on the screen, the acceptance block is next to the Verify On field. Press the space bar or RETURN to move the acceptance block to Verify Off.
3. Once selected, Verify On remains in effect until you restart the system or until you issue a Verify Off command.





# 3

## THE EDITOR

Introduction

How to Invoke the Editor

Configuration Parameters

Editor Features

The Window

Editor Commands





## CHAPTER 3 THE EDITOR

### 3.1 INTRODUCTION

This chapter describes the Wang PC Editor (PCEDIT.EXE). You use the Editor to create and modify source files for programs in the compiled languages and the Assembler. However, you can also use the Editor to create and modify text files, such as memos, reports, and lists.

Section 3.2 describes how to invoke the Editor. Section 3.3 explains the Editor's default parameter values and how to change them. Section 3.4 describes several features of Editor operation.

Using the Editor involves entering and modifying text within an area of the screen called the "Window." To create and edit files, you need to know how to use the window. Section 3.2 explains the window.

You edit text by issuing the commands provided by the Editor. Section 3.6 explains each of the Editor's commands and how to issue them.

### 3.2 HOW TO INVOKE THE EDITOR

You can invoke the Editor from the Program Development Menu or from the DOS Command Processor. To use the first method, select the Program Development option from the Main System Menu. Figure 3-1 shows the Program Development Menu.



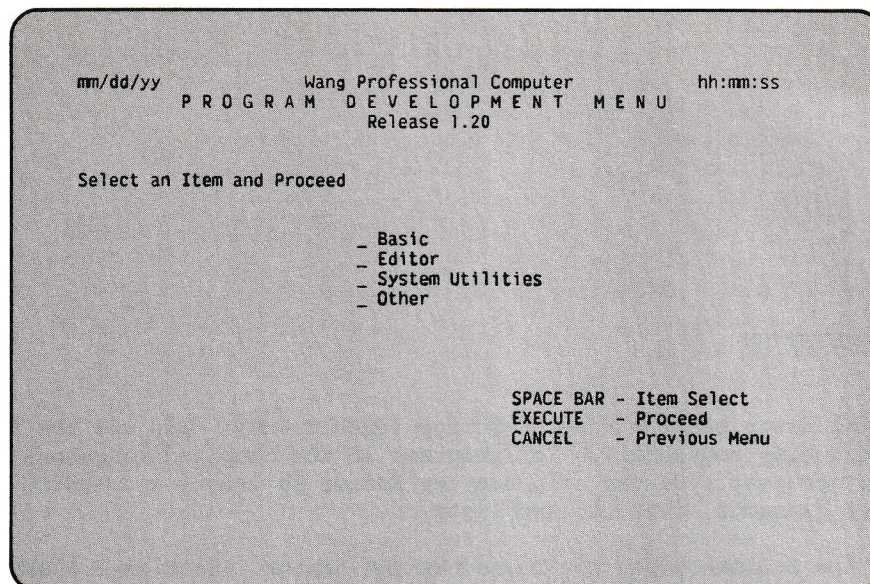


Figure 3-1. The Program Development Menu

If you are using a dual-drive diskette system, insert System Diskette II into Drive B. If you are using a single-drive diskette system, insert System Diskette II into Drive A. From the Program Development Menu, select the Editor option. A file name prompt then appears. Although the words File Name appear on the screen, the prompt accepts a full file specification as a valid response. Enter the specification of the file you wish to edit.

The other method of invoking the Editor is to select the DOS Command Processor option from the Main System Menu. The DOS prompt then appears. Respond to the prompt by typing:

```
PCEDIT [<filespec>]
```

If you supply the optional file specification, the Editor automatically loads that file. If you do not supply the file specification, the Editor prompts you for it.

To create a file, invoke the Editor and enter a specification for a file that does not exist on the disk you are accessing. The Editor then creates the file. (You can also create a file using the FILE COPY System utility or the COPY DOS utility.)

## The Editor

### 3.3 CONFIGURATION PARAMETERS

When you enter the file specification, the Editor searches the default directory for a file named CONFIG.EDT. This file contains default tab and width settings for several different programming languages. The extension to the file name identifies the file's language. For example, the Editor supplies .ASM files with the default tab settings and line length for Assembler. If CONFIG.EDT does not define values for an extension, the Editor uses 80 for the default width and sets nine default tab positions at every eighth column beginning at column eight.

**NOTE:**

If the document you are editing was created with a width greater than 80, you must use the SET WIDTH command (refer to Section 3.6) to override the default width. If you do not reset the width, lines you change are shortened to a width of 80 characters. Valid widths are 80 to 255.

CONFIG.EDT also specifies whether the Editor saves the file in compressed format or uncompressed ASCII format and whether the Editor adds CONTROL + Z to the file as the end-of-file indicator. Compressed format uses less disk space, because a tab replaces every group of contiguous blank spaces preceding an 8-column boundary. CONFIG.EDT specifies uncompressed format as the default.

Some programs that run on the Wang PC require CONTROL + Z as the end-of-file indicator. However, the default specified by CONFIG.EDT is that the Editor does not add CONTROL + Z to a file because most programs do not require it.

You can change the CONFIG.EDT defaults or add defaults for other file name extensions by editing CONFIG.EDT. A CONFIG.EDT command is a text string that consists of one to three characters (the file name extension without the period), followed by a space, a keyword, an equal sign, and then a value or values separated by commas. The keywords are TABS, WIDTH, COMPRESS, and CTRLZ. The values for TAB and WIDTH are decimal numbers. The values for COMPRESS and CTRLZ are either TRUE or FALSE.

A sample CONFIG.EDT file would be as follows:

```
ASM TABS=8,8,8,8
ASM WIDTH=120
ASM COMPRESS=FALSE
ASM CTRLZ=FALSE
```

All the defaults defined for various extensions must be contained in one CONFIG.EDT file. If CONFIG.EDT contains more than one definition of a particular value for an extension, the Editor uses the last one.

The Editor



### 3.4 EDITOR FEATURES

This section explains several features of the Editor. It describes line numbering, the Editor's use of memory, the Editor Help screens, and the backup files created by the Editor.

#### 3.4.1 Line Numbers

The Editor always numbers lines sequentially beginning at line one. If you insert or delete a line, the Editor renumbers all lines. Line numbers are not part of the text. They are only used as a means to reference a particular line or a group of lines. The line number of the cursor line appears at the top of the screen. Line numbers do not appear beside the lines on the screen.

#### 3.4.2 Buffer Size

When you edit a file, the Editor maintains the entire file in a memory buffer. The amount of memory available with the operating system and the Editor program resident determines the size of this buffer. The available memory space varies depending on the configuration of your system. If a file is too large to fit in available memory, you can create a new file and use the LOAD PARTIAL FILE command (refer to Section 3.6) to insert a section of an old file into the new.

#### 3.4.3 Help Screens

You issue Editor commands using single keystrokes or shifted keystrokes. To find the keystroke required for a command, press HELP. A Help screen that defines the keystroke for each command appears on the top three lines of the screen. If the command you desire is not on this screen, press HELP again. Another Help screen appears. Pressing HELP a number of times displays successive screens and finally brings you back to the original screen. While a Help screen is displayed, the window remains in view, and you can invoke any command.

#### 3.4.4 .BAK Backup Files

When you use the END SESSION AND SAVE CHANGES or SAVE PARTIAL FILE command to save any changes you have made to a file, the Editor keeps a backup copy of the original file by changing its extension to .BAK. The backup copy has the same file name as the newly edited file. If a .BAK file with that name already exists, the Editor deletes the previous .BAK file. Thus, you always have a copy of the file as it existed immediately prior to your most recent changes.

The Editor



### 3.5 THE WINDOW

The window is a maximum of 21 lines long. The first four lines of the screen are never used for the window. They are reserved for header, status, prompt, and tab lines. The window is bordered by two horizontal lines of blocks. The top line of the border is highlighted when you first enter the Editor.

Two modes of editing within the window exist: center mode and floating cursor mode. In center mode, the cursor line is always in the center of the screen. Therefore, you can only edit the text in the screen's center. To scroll the screen up or down and move a new line to the center of the screen, press the North or South cursor control key. Center mode is the default mode when you begin editing a file.

In floating cursor mode, you can move the cursor to any line in the window and edit the text in that line. To scroll one new line at a time into the window, position the cursor at the top line and press the North cursor control key, or position the cursor at the bottom line and press the South cursor control key. In either mode, you can scroll the preceding or succeeding 21 lines into the window by pressing PREV or NEXT, respectively.

If you have not yet specified a file for edit or if you have not yet created the file, the border lines appear with no space between them, as in Figure 3-2.

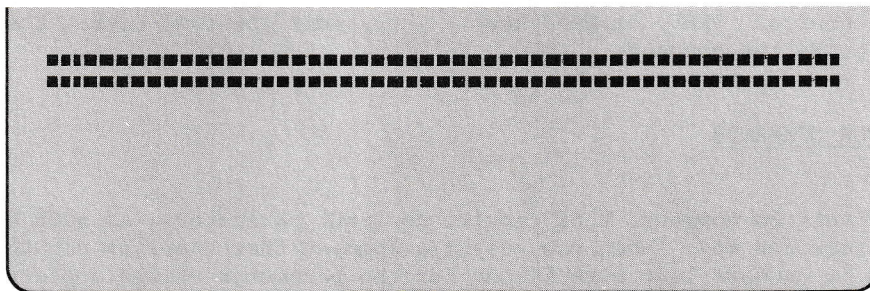


Figure 3-2. The Initial Window

To create a new text file, move the cursor into the window by pressing EXEC. Then, enter text on the cursor line. Each time you want to add a line to the file, press EXEC again.

When you specify an existing file for edit, the top border of the window appears in the center of the screen with the first ten lines of the file below it. Figure 3-3 illustrates this.

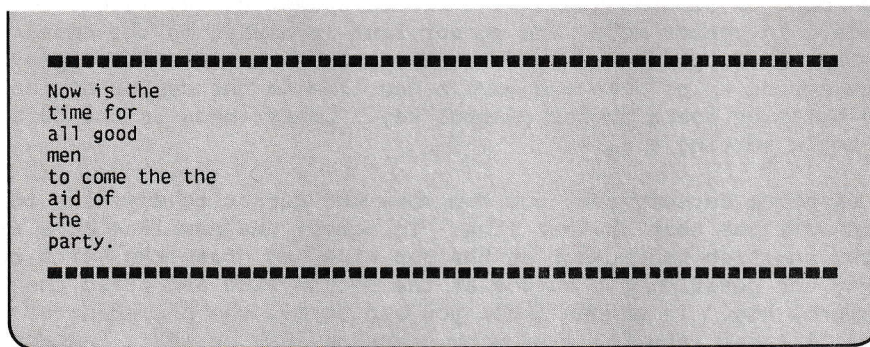


Figure 3-3. The Window with the First Lines of a File

To edit existing text, move the cursor to the line you wish to edit by using the cursor control, PREV, or NEXT keys. Then, edit the text within the window by using the Editor commands.

### 3.6 EDITOR COMMANDS

The Editor acts on commands that require no input parameters, as soon as you press the required key. When you select a command that requires you to supply parameters, a command line with fields for the parameter values appears at the top of the screen. You can edit these fields in the same manner that you edit a text line. Use TAB, BACK TAB, and RETURN to move between fields. When you have entered the values you want, press EXEC. To abort a command, press CANCEL.

The Editor

Special Function key 15 serves as a recall key for parameter fields and text lines. Press SF 15 after you invoke a command to update a parameter field with the value the field had the last time you invoked the command during that session. For example, if you invoke the SEARCH command and press SF 15, the last string that you searched for appears in the search field. Press SF 15 after you have typed over text already existing on a line to restore the previous text.

A description of each of the editing commands is presented below. The commands are organized according to function: cursor movement, text insertion and replacement, text deletion, special features, and loading files and exiting the Editor.

### 3.6.1 Cursor Movement

You can move the cursor by character, by line, by screen, or by larger intervals, to the beginning and end of the file. The keys you use include the East, West, North, and South cursor keys as well as NEXT, PREV, and GO TO.

#### Movement by Character

The CURSOR EAST key moves the cursor one position to the right. The CURSOR WEST key moves the cursor one position to the left. If you press these keys continually, the cursor moves multiple positions to the right or left. The cursor line does not change. If the line length is greater than 80, the screen scrolls left by one position or right by one position when the cursor is at the right or left edge of the screen. Scrolling ceases when the cursor reaches the start or end of the line.

Press the East or West cursor key.

#### Movement by Line

The CURSOR NORTH key moves the cursor one line above the current line. The CURSOR SOUTH key moves the cursor one line below the current line. If you press these keys continually, the cursor moves multiples lines up or down. The cursor column does not change. The screen scrolls according to whether center mode or floating cursor mode is in effect. (Refer to the CENTER MODE command.)

Press the North or South cursor key.

The SHIFT + CURSOR EAST keys move the cursor to the last character on the line. The SHIFT + CURSOR WEST keys move the cursor to Column one. The cursor line does not change. The screen scrolls left or right if the new cursor position is not on the currently displayed screen.

Press SHIFT + the East or West cursor key.

The Editor



The TAB key moves the cursor to the next tab stop. If there are no tab stops to the right of the cursor, the cursor moves one space to the right. Tabs do not occur in the actual text; therefore, you cannot use the Search command (see Special Features subsection, TAB command) to find them.

#### Movement by Screen

The NEXT key moves the entire next screen into the window. The cursor position remains the same unless the cursor would be positioned beyond the last line of text on the new screen. In that case, the command positions the cursor on the last line of text with the column unchanged.

Press NEXT.

The PREV key moves the entire previous screen into the window. The cursor position remains the same, unless the cursor would be positioned before the first line of text on the screen. In that case, the command positions the cursor on the first line with the column unchanged.

Press PREV.

#### Movement by Larger Intervals

The SHIFT + NEXT keys move the cursor to the last line of the file being edited. The SHIFT + PREV keys move the cursor to the first line of the file being edited. The cursor column does not change. The screen scrolls according to whether center mode or floating cursor mode is in effect. (Refer to the Special Features, CENTER command.)

Press SHIFT + NEXT or SHIFT + PREV.

The GO TO key prompts you to enter a line number and positions the cursor at the line you specify. The column does not change.

Press GO TO, enter line number, press EXEC.

### 3.6.2 Text Insertion and Replacement

The Editor allows you to create new text of any length and at any position in the file. There are separate commands which complete both a text deletion and replacement simultaneously to make text replacement efficient. The keys you use for text insertion and replacement include INSERT and REPLC.

## The Editor

### Text Insertion

In insert mode, the Editor inserts the characters that you type into the text at the current cursor position. When the Editor is not in insert mode, the characters you type overwrite the characters currently occupying those positions. Insertion using the Editor causes existing text to move to the right. If you press BACK SPACE while in insert mode, the character to the left of the cursor is deleted.

While in insert mode, you can insert from one character up to one line of characters at a time. Once you are at the end of the line, the system automatically exits insert mode. To enter additional lines, you have to press INSERT again or press EXEC to create a blank line below the current cursor position.

While insert mode is in effect, the letters Ins appear highlighted in the status line at the top of the screen, and the LED at the far left is on.

Press INSERT while insert mode is off to enter insert mode.

Press INSERT while insert mode is on to exit insert mode.

Press EXEC to create a blank line, position the cursor at the beginning of the line, and enter insert mode.

### Text Replacement

When you use the text replacement command, REPLC key, the Editor searches for a string of characters and replaces it with another string which you specify. First, the Editor prompts you to enter a search string and a replace string. Then, the Editor searches for the first string, beginning at Column one of the current cursor line. The search only recognizes characters that have the same case as the characters in the search string you entered. If the Editor finds the string, it displays the prompt "Replace Y or N" with the default response of Y. To replace the string, press EXEC. If you do not want to replace this occurrence of the string, enter N and press EXEC. In either case, the search continues for another occurrence of the search string. To terminate text replacement at any time, press CANCEL.

#### NOTE:

If the replacement string is longer than the search string, characters at the end of the line can be lost. A message appears informing you that the replacement will result in a loss of characters.

If you want to replace all matches without receiving a prompt for each occurrence of the search string, invoke this command by pressing SHIFT + REPLACE.

Press REPLC or SHIFT + REPLC, enter search string, press RETURN, enter replacement string, press EXEC.

The Editor

### 3.6.3 Text Deletion

You can delete text either by character or by line. The keys you use for text deletion include BACK SPACE, DELETE, ERASE, and STOP.

#### Deletion by Character

You can delete a character using either of two commands: BACK SPACE or DELETE. BACK SPACE deletes the character previous to the current cursor position; DELETE deletes the character in the current cursor position. With the BACK SPACE deletion, the Editor does not adjust the text. With DELETE, the characters on the line to the right of the cursor move one position left and a space is placed in the last column.

Press BACK SPACE.

Press DELETE.

#### Deletion by Line

The SHIFT + DELETE command deletes the line at the current cursor position. All text within the line is deleted, including the characters prior to the current cursor position. Text is automatically adjusted after the line is deleted.

Press SHIFT + DELETE.

You can also delete a line and enter insert mode with one command, SHIFT + ERASE. This command erases all characters on the cursor line, replaces them with blanks, and positions the cursor at the beginning of the line. ERASE deletes all characters following the current position, replaces them with blanks, and maintains the cursor position at the point where you pressed ERASE.

Press SHIFT + ERASE.

Press ERASE.

To delete more than one line at a time, press STOP. This command deletes a block of text lines. The command prompts you to enter the starting line and the ending line. The default for both fields is the current line number. To change the line number in either field, use the North or South cursor control key (shifted or unshifted), or NEXT or PREV to position the cursor at the desired line. The line number in the field automatically changes to that of the cursor line. Use the TAB, BACK TAB, and RETURN keys to move between fields. When the values you want appear in the prompt fields, press the EXEC key to delete the lines you have specified.

Press STOP, enter first line to delete, advance to next field, enter last line to delete, press EXEC.

The Editor



### 3.6.4 Special Features

The special features of the Wang PC Editor discussed below include automatic text centering, text copy, text move, text print, and text search. Also included in this section are the commands you need to set tabs and to set the width of the lines within a file.

#### Text Centering

Center mode causes the line you are editing to be fixed at the vertical center of the screen. In this mode, the screen scrolls each time you position the cursor to a new line. Center mode allows you to see the text lines that appear directly above and directly below the line you are currently editing.

Floating cursor mode allows you to edit at any position on the screen. In floating cursor mode, the screen scrolls when you try to position the cursor above the top display line or below the bottom display line. With floating cursor mode, you can view a small portion of text without losing view of the top lines, for example, as you edit the bottom lines. Floating cursor mode is also helpful on systems with a low resolution video board since scrolling is slower with this board.

In center mode, the center line of the window is highlighted. In floating cursor mode, nothing in the window is highlighted. Therefore, your current mode is always clear from viewing the screen.

Press CENTER while in floating cursor mode to invoke center mode.

Press CENTER while in center mode to invoke floating cursor mode.

#### Text Copy

This command copies a block of lines from one specified point in the text to a second specified point. The original lines remain intact at the first location. The command prompts you for a starting line, an ending line, and a target line. The copied lines are inserted after the target line. The default value for each of the three fields is the current line number. To change the line number in any of the fields, use the North or South cursor control key (shifted or unshifted), or NEXT or PREV to position the cursor on the desired line. The line number in the field automatically changes to the cursor line. Use TAB, BACKTAB, and RETURN to move between fields. When the values you want appear in the prompt fields, press EXEC, and copying takes place.

Press COPY.

### Text Move

This command moves a block of lines from one specified point in the text and inserts them at a second specified point. The original lines are deleted. The command prompts you for a starting line, an ending line, and a target line. The lines being moved are inserted after the target line. The default value for each of the three fields is the current line number. To change the line number in any field, use the North or South cursor control key (shifted or unshifted), or NEXT or PREV to position the cursor at the desired line. The line number in the field automatically changes to that of the cursor line. Use TAB, BACKTAB, and RETURN to move between fields. When the values you want appear in the prompt fields, press EXEC, and the lines are moved.

Press MOVE.

### Text Print

This command sends a block of text lines to the printer. The command displays a prompt for the starting line and the ending line. The default for both fields is the current line number. To change the line number in either field, use the North or South cursor control key (shifted or unshifted), or NEXT or PREV to position the cursor at the desired line. The line number in the field automatically changes to that of the cursor line. Use TAB, BACK TAB, and RETURN to move between fields. When the values you want appear in the prompt fields, press EXEC to print the lines.

Press PRINT.

### Text Search

This command prompts you to enter a string of characters and searches for the first occurrence of that string beginning at the line following the current cursor line. If the search finds the string, the line in which the text occurs becomes the new cursor line, and the line is highlighted in the center of the screen. To find the next occurrence of the string, press EXEC. If the search does not find the string, a message is displayed, and the cursor position does not change. If you want the search to find both uppercase and lowercase occurrences of a string, invoke this command by pressing SHIFT + SEARCH.

Press SEARCH or SHIFT + SEARCH.

### Set Tabs

This command allows you to set and modify tab positions. When you invoke the command, the cursor is positioned at Column zero in the tab line. Use the East and West cursor control keys to move the cursor to the desired tab position. To set a tab, press TAB or T (shifted or unshifted). A tab indicator then appears at the cursor position in the tab line. To erase a previously set tab, type over the tab indicator with the space bar or a hyphen (-).

Press TAB.

### The Editor

### Set Width

This command allows you to change the line length. When you invoke the command, it prompts you to enter the new line length. Enter a number between 80 and 255 and then press EXEC.

#### NOTE:

This command does not reformat the text. If you shorten the line width, existing lines can be truncated. However, the text is not lost. You can recover it by resetting the line width to the previous value. This command does not change the number of characters which appear on one line on the screen, it changes the number of characters within a logical line.

Press FORMAT.

### 3.6.5 Load Files and Exit Editor

Within the Editor, you can load a partial or complete file into the file that is currently being edited. In this way, you can merge two files effectively at any position. Also included in this section are the commands you need to save files and exit the Editor.

#### Load Files

You can load either a complete file or portions of a file. To load portions of a file, press SHIFT + INDENT. This command reads a range of lines from a file into the text buffer and inserts them into your existing text file after the current cursor line. The command prompts you to enter a file specification. The command also prompts you to enter the starting line and ending line. The default values for these fields are 1 and 9999, respectively. Type the values specifying the range of lines you want to load and press EXEC.

Press SHIFT + INDENT.

To load a complete file, press INDENT. This command loads a specified text file into memory from a disk. The command prompts you to enter a file specification. After you enter the specification you want, press EXEC to load the file. If you have made changes to the current text file, a prompt appears asking if the current text area should be saved. The file specification of the current text also appears. Press EXEC to save the changes. If you do not want to save the changes, enter N before pressing EXEC.

If you respond to the prompt by typing C or c, the Editor saves the text in compressed format. Press EXEC, or type A or a, to save the text in uncompressed format (the default). (Refer to Section 3.3 for an explanation of compressed and uncompressed formats.)



### Save Files

This command writes a range of lines from memory to disk. The command prompts you to enter a file specification. It also prompts you for the starting line, and the ending line. The default for both fields is the current line number. To change the line number in either field, use the North or South cursor control key (shifted or unshifted), or NEXT or PREV to position the cursor at the desired line. The line number in the field automatically changes to that of the cursor line. Use TAB, BACKTAB, and RETURN to move between fields. When you press EXEC, the lines are written to the specified file.

#### NOTE:

If the specified file already exists, this command deletes the previous version.

Press SHIFT + GO TO.

### Exit Editor

When you want to end an editing session, press SHIFT + CANCEL. The system gives you the option of saving your changes by displaying the prompt PRESS EXECUTE AND TEXT WILL BE SAVED, TYPE N AND CHANGES WILL BE LOST. The name of the file being edited also appears on the monitor to remind you which file will be written if you press EXEC. If you press the N or n, all changes are lost.

If you respond to the prompt by typing C or c, the Editor saves the text in compressed format. If you press EXEC or type A or a, the Editor saves the text in uncompressed format (the default). (Refer to Section 3.3 for an explanation of compressed and uncompressed formats.)

If you invoke this command by mistake, you can abort the command by pressing CANCEL.

Press SHIFT + CANCEL or CONTROL + C.

# 4

## DOS COMMAND PROCESSOR

Introduction  
Using the DOS Command Processor  
Format Notation  
Editing DOS Commands  
The DOS Utilities  
Batch Processing  
Replacing the System Screens  
with the DOS Command Processor

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## CHAPTER 4 USING THE DOS COMMAND PROCESSOR

### 4.1 INTRODUCTION

Chapter 2 explains how to give commands to the Wang Professional Computer by selecting options from menus. This chapter explains another way to give the Wang PC commands--the DOS Command Processor. (DOS stands for Disk Operating System.)

When you select the DOS Command Processor option on the Main System Menu, the following prompt, known as the DOS prompt, appears on the screen:

A:

You respond to the DOS prompt by typing commands. The name of the program that is running when this prompt appears is COMMAND.COM.

From the Command Processor, you can execute any program that runs on the Wang PC, except those written in interpretive BASIC. Thus, programs you can run from the Command Processor include those supplied with your system and those you may have written yourself or acquired subsequently.

To run many of the system programs supplied with the Wang PC, you respond to the DOS prompt with a "keyword" that tells the computer what program you are calling. For example, if you want to load interpretive BASIC from the Command Processor, you type BASIC after the prompt. This chapter describes several of these system programs, called DOS utilities. The remaining system programs you can execute through the Command Processor are described in other manuals.

Most of the system utilities described in Chapter 2 are also DOS utilities. This chapter describes how to call those programs from the Command Processor. In addition, it describes other DOS utilities not listed on the System Utilities Menu.

This chapter also explains how to create batch files by means of which you can enter several DOS commands in one step. When you call this kind of file through the Command Processor, the computer loads the file and then executes the commands sequentially. Finally, this chapter explains how to load the DOS Command Processor, instead of the system screens, directly after system start-up.

#### 4.1.1 Who Should Use the DOS Command Processor?

If you are not proficient with computers, use the menus rather than the Command Processor wherever possible. Typing commands requires you to follow numerous rules that are absolutely inflexible. Violating even a seemingly insignificant rule, perhaps by misplacing a comma or forgetting to insert a blank space where required, can change the meaning of the command.

The reason these rules must be so inflexible is that, contrary to popular belief, computers are not actually smart, just fast. If you type a word incorrectly or forget a punctuation mark, the computer is unable to figure out what you meant to tell it. The computer responds only to what is actually given it, exactly as given.

When you make a mistake, an error message appears on the screen to tell you that something is wrong. It is impossible, however, for the error messages to be so specific that in every case they tell you precisely what went wrong. Sometimes the error is obvious. Other times it can be frustratingly hard to find. Unless you are very experienced with computers, then, it is preferable to enter a command from a menu.

#### 4.1.2 How to Use This Chapter

Section 4.2 gives general information about responding to the Command Processor's prompt, including how to change the default disk drive. (If your system has only one disk drive, read the instructions in Section 1.3.1 before using the Command Processor.)

Section 4.5 contains detailed descriptions of the DOS utilities in alphabetical order. Each description includes a format that schematically represents the proper syntax of the command used to call the program. In order to understand these formats, you must first understand the syntax notation and parameters used in the formats, along with the function of all-purpose file name characters.

Therefore, syntax notation is explained in Section 4.3, before the DOS utility descriptions. The all-purpose characters are explained in Section 1.4.1. Most of the parameters used in DOS commands are defined in Chapter 1. Those parameters not defined in Chapter 1 are defined in the descriptions of the utilities that use them.

Using the DOS Command Processor

Before using the DOS utilities, it is also helpful to understand the special editing functions provided by the Wang PC to facilitate entering DOS commands. Section 4.4 describes those special editing functions.

Section 4.6 explains how to create and use batch files, and Section 4.7 explains how to load the DOS Command Processor directly after system start-up.

## 4.2 USING THE DOS COMMAND PROCESSOR

This section contains general instructions for using the Command Processor. Some of the instructions are applicable to all DOS commands. All are at least applicable to more than one command.

### 4.2.1 How to Enter and Terminate a DOS Command

When the Command Processor prompt appears, it is followed by the cursor indicating where you are to begin entering your response. You can type the command in any combination of uppercase and lowercase characters. The computer converts them to uppercase internally. (Certain words in the IF and FOR...IN...DO commands must be typed in uppercase. Refer to Section 4.5.)

Type your response in accordance with the specifications described in Section 4.5. For example, to call the DATE utility, type DATE as follows:

A:DATE

then press RETURN to enter the command.

When the execution of a DOS command has finished, the DOS prompt returns to the screen on the line below any output produced by the command. You can terminate a command while it is still executing by hitting SHIFT + CANCEL or CONTROL + C. Again, the DOS prompt returns to the screen on the next line. To return to the Main System Menu from the DOS prompt, respond to the DOS prompt by typing:

EXIT

and pressing RETURN.

### 4.2.2 Internal and External Program Types

Programs run from the Command Processor are of two types: programs internal to the Command Processor (program COMMAND.COM) or programs external to it. The internal programs are always available when the DOS prompt appears. Most of the DOS utilities are internal programs.



All other programs are external, that is, the computer must read them into memory from disk each time it executes them. Therefore, do not issue a command unless the program is contained on the default drive or the drive you designate in the file specification. The DOS utility descriptions in Section 4.5 indicate whether the utility is internal or external.

#### 4.2.3 The Default Disk Drive

When you enter a DOS command without including an optional drive designation, the computer supplies a default drive designation. The default disk drive is the device where the computer looks for any files named in DOS commands when a command does not specify a particular drive. The designator for the default drive, a letter of the alphabet, appears before the colon in the DOS command prompt.

To change the default drive, respond to the DOS prompt by typing a new drive designator followed by a colon at the cursor position. When you press RETURN, the DOS prompt reappears with the colon preceded by the new drive designator. For example:

```
A: _
A:B:
B: _
```

#### 4.3 FORMAT NOTATION

The DOS command formats in Section 4.5 employ syntax notation and punctuation marks. This section gives the rules governing symbols and punctuation in those formats.

##### 4.3.1 Syntax Notation

- Capital letters indicate portions of statements that must be entered exactly as shown. These are the keywords that indicate to the computer which utility to call. Note that although the formats display keywords in capital letters, you can type them in any combination of uppercase or lowercase.
- Items in angular brackets (< >) are parameters for which you supply a value. What you enter must conform to the rules for that parameter.

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- Square brackets ([]) indicate that the enclosed item is optional. Items not in square brackets are required. You must supply something for any item not in square brackets.
- Ellipses (...) indicate that an entry can be repeated as many times as desired.
- Angular brackets, square brackets, and ellipses are not part of the commands they appear in, but are symbols used to display the syntax of the commands. They are not typed when the commands whose formats they appear in are typed.
- All commas, colons, slash marks, equal signs, and plus signs are punctuation marks that are part of the commands they appear in. They must be typed exactly as shown in the formats. This is one of the easiest rules to violate, so keep it in mind. (In one, and only one case, punctuation that is not shown in a format can be used in a command. Refer to Section 4.3.2.)

Some DOS commands include optional modifiers that slightly change the action of the command. These command modifiers are called switches. For example, the PRINT command has three switches. All three affect the PRINT command in a different way. One switch adds files to a print request; one deletes files from a print queue; and the third deletes the entire print queue. Switches are usually preceded by a "/" or a "-".

#### 4.3.2 Punctuation

When you enter a command, you must separate user-supplied values from keywords by one, and only one, of the following: a space, comma, semicolon, equal sign, or TAB key. The command formats do not display all of these options. Therefore, in this case, but only in this case, you can use punctuation that is not shown in the format for a command.

#### 4.4 EDITING DOS COMMANDS

The DOS Command Processor offers a variety of functions that make command line editing a simple and efficient task. These functions make use of two temporary storage areas, called "buffers," in memory. One buffer holds the command you enter until you send it to the Command Processor by pressing RETURN. The other buffer holds a copy of the command for editing and functions as a template for entering the next command. Pressing RETURN also copies the command line to the template.

You edit a command line by entering one of the following kinds of input:

- Alphanumerics
- Punctuation
- Special editing functions
- Control character functions

The special editing and control character functions greatly increase the Command Processor's ease-of-use. These functions are always resident in the operating system. The following subsections explain the special editing and control character functions.

#### 4.4.1 Special Editing Functions

The special editing functions relieve you of repeatedly typing in the same sequences of keys by remembering the last command line entered and placing it in the template. By using the template and executing the special editing functions, you receive the following advantages:

1. You can repeat an entire command with only two keystrokes.
2. You can edit and retry an erroneous command without reentering the entire command line.
3. You can edit and execute a command line similar to the preceding command with a minimum of typing.

Table 4-1 contains a complete list of the special editing functions.



Table 4-1. Special Editing Functions

| Key          | Editing Function                                                                                                 |
|--------------|------------------------------------------------------------------------------------------------------------------|
| East cursor  | Copy one character from the template to the new command line.                                                    |
| COPY         | Copy all characters up to a specified character from the template to the new command line.                       |
| SHIFT + COPY | Copy all remaining characters in the template to the new command line.                                           |
| DELETE       | Skip over (do not copy) a character in the template to the new command line.                                     |
| SEARCH       | Skip over (do not copy) the characters in the template up to the character specified.                            |
| ERASE        | Void the current input; leave the template unchanged.                                                            |
| INSERT       | Enter insert mode. To exit insert mode (the default), press INSERT again or press any other special editing key. |
| MOVE         | Make the new line the new template.                                                                              |

As an example of the use of the special editing keys and command entry in general, assume that you have entered the following command:

DIR PROG.COM

This command displays the directory entry for the file PROG.COM on the terminal screen. Since the command is saved in the template, you can repeat the command by typing three keys, SHIFT + COPY and RETURN. The repeated command then appears on the screen. Pressing SHIFT + COPY causes the repeated command to appear on the screen. Pressing RETURN causes the command line to be processed by the Command Processor.

Now assume that you want to display the directory entry for a file with the file name PROG and the extension .ASM. To do this, we will use the template, and press the COPY key followed by C. Pressing the COPY key followed by C copies characters from the template to the command line buffer up to, but not including, the character C. The text DIR PROG. appears on the screen. Now, type:

ASM

The result is DIR PROG.ASM\_

The new command is now in the command buffer. To send this command to the Command Processor and the template, press RETURN. The template now contains the command DIR PROG.ASM

Next, assume that you want to execute the command TYPE PROG.ASM. To do this, you type:

TYPE

and press INSERT, space bar, SHIFT + COPY, and RETURN. The alphanumeric characters TYPE are entered directly into the command buffer; they also automatically replace corresponding characters in the template. This automatic replacement is turned off when you press INSERT. Thus, the characters TYPE replaced the characters DIR and a space in the template. Pressing INSERT and the space bar inserted a space between TYPE and PROG.ASM. Pressing SHIFT + COPY copied the rest of the template to the command line.

When you pressed RETURN, you sent the new command to the Command Processor and the template. Therefore, the template now contains the command TYPE PROG.ASM

If you had misspelled TYPE as BYTE, a command error would occur. If you discovered the error before you pressed RETURN, you could press MOVE instead. Pressing MOVE sends the command to the template but not to the Command Processor. The command in the template would then be BYTE PROG.ASM

You can then edit this erroneous command line with the special editing functions. Type:

T

Press the East cursor control key. Type:

P

Then press SHIFT + COPY. The East cursor control key copies a single character from the template to the command buffer. The SHIFT + COPY copies the rest of the template. The resulting command, TYPE PROG.ASM, is the one you want.

As an alternative, you could have used the DELETE and INSERT keys with the same template to achieve the same result. Pressing DELETE twice skips over the first two template characters. Pressing the East cursor control key copies the third template character. Next, press INSERT and type:

YP

to insert these letters in the new command. Finally, press SHIFT + COPY to copy the rest of the template to the new command. The result is the command TYPE PROG.ASM

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#### 4.4.2 Control Character Functions

While commands are being entered, DOS recognizes seven control character functions. These control characters and the functions associated with them are shown in Table 4-2.

Table 4-2. Control Character Functions

| Control Character | Function                                                                                                                                                                                                                            |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CONTROL + N       | Cancel echoing of output to line printer.                                                                                                                                                                                           |
| CONTROL + C       | Abort current command.                                                                                                                                                                                                              |
| CONTROL + H       | Remove last character from command, and erase character from terminal screen. The BACKSPACE key also performs this function.                                                                                                        |
| CONTROL + J       | Insert physical end-of-line, but do not empty command line. This function extends the current logical line beyond the physical limits of one terminal line.                                                                         |
| CONTROL + P       | Echo terminal output to the line printer.                                                                                                                                                                                           |
| CONTROL + Q       | Resume display of output to the monitor. Press CONTROL + S to suspend the display.                                                                                                                                                  |
| CONTROL + S       | Suspend display of output to monitor. Press CONTROL + Q to continue the display.                                                                                                                                                    |
| CONTROL + X       | Cancel the current command, empty the command line, and then output a back slash (\), carriage return, and line feed. The template used by the Special Editing commands is not affected. The ERASE key also performs this function. |



#### 4.5 THE DOS UTILITIES

This section presents a detailed description of how to use the DOS utilities. The utilities appear in alphabetical order. The description of each utility includes the following information:

- a description of its function
- the menu option to which it corresponds, if any
- its type, internal or external
- the format of its command
- brief descriptions of the parameters used in the command
- any explanatory comments needed in addition to those given for the corresponding menu option
- examples, where appropriate

The following is a list of the DOS utilities:

| <u>Utility</u> | <u>Function</u>                                                                                                                                                                                                                                                                                                                                               |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BACKUP         | Create backup copies of files from the Winchester disk on diskettes.                                                                                                                                                                                                                                                                                          |
| CHDIR          | Specify or change the default directory.                                                                                                                                                                                                                                                                                                                      |
| CHKDSK         | Analyze the contents of a disk, check for inconsistencies between the directories and the File Allocation Table. Report the number of bytes available on disk and in memory; optionally restore consistency, reports the number of noncontiguous allocation units per file or per disk, and display the names of files and directories as they are processed. |
| CLS            | Clear the screen leaving the DOS prompt in the upper left-hand corner.                                                                                                                                                                                                                                                                                        |
| COPY           | Make duplicate copies of one or more files; can also create files.                                                                                                                                                                                                                                                                                            |
| COPY +         | Make a combined file by appending one or more files to another file.                                                                                                                                                                                                                                                                                          |

Using the DOS Command Processor

| <u>Utility</u> | <u>Function</u>                                                                                                                                                                                                       |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CTTY           | Change the device that receives the input/output normally sent to the monitor.                                                                                                                                        |
| DATE           | Display the current date, as known to the computer, and permits you to enter a new date.                                                                                                                              |
| DEL            | Delete a file or a group of files from a disk.                                                                                                                                                                        |
| DIR            | Display an entire directory, specific directory entries, or the file names in a directory on the monitor screen.                                                                                                      |
| ECHO           | Turn the console display on or off. It can also display a message.                                                                                                                                                    |
| FOR...IN...DO  | Allow instructions to be executed repeatedly with different parameter values.                                                                                                                                         |
| FORMAT         | Prepare a disk to accept files by initializing the disk directory, File Allocation Table, and other areas of the disk; analyze the disk for any defective tracks.                                                     |
| GOTO           | Transfer control to the line after a label in a batch file.                                                                                                                                                           |
| IF             | Allow conditional execution of commands.                                                                                                                                                                              |
| MENUICMP       | Modify existing menus and create new menus.                                                                                                                                                                           |
| MKDIR          | Create a new subdirectory.                                                                                                                                                                                            |
| PATH           | Define the directories that are searched when a referenced file is not found in the default directory or in the directory designated in the file specification; optionally, display the current alternate path names. |
| PAUSE          | In batch files, cause the computer to wait for you to respond to the prompt "Strike a key when ready...."; optionally, display a remark.                                                                              |

| <u>Utility</u> | <u>Function</u>                                                                                                                  |
|----------------|----------------------------------------------------------------------------------------------------------------------------------|
| REM            | Display remarks during the execution of a batch file.                                                                            |
| RENAME         | Change the name of a file.                                                                                                       |
| RESTORE        | Copy Winchester disk backup files from diskette back onto the Winchester disk.                                                   |
| RMDIR          | Remove an empty subdirectory from a disk.                                                                                        |
| SHIFT          | In a batch file, this utility allows you to enter more than 10 parameter values on the command line.                             |
| TIME           | Display the current time, as known to the computer, and allows you to enter a new time.                                          |
| TYPE           | Display the contents of a file on the screen.                                                                                    |
| VER            | Display the version number of the operating system.                                                                              |
| VERIFY         | Compare input to output when the computer creates, modifies, or copies files.                                                    |
| VOL            | Display the volume ID of the disk in the specified drive.                                                                        |
| WANGCOPY       | Make duplicate copies of one or more files, make combined files by appending one or more files to another, and can create files. |
| WCOMPARE       | Compare the contents of two files, displays their differences, and tabulate the number of differences.                           |
| WDSKCOPY       | Copy the entire contents of one diskette to another and reformat the destination diskette if necessary.                          |
| WPCNVDOC       | Convert Wang Word Processing documents to DOS text files.                                                                        |
| WPCONV         | Convert DOS text files to Wang Word Processing documents.                                                                        |



#### 4.5.1 BACKUP Utility

##### Function

This utility creates a backup copy of the Winchester disk or a portion of the Winchester disk; it automatically formats the output diskettes used for the backup.

##### Menu Option

Winchester Backup

##### Type

External, on a separate diskette provided with the Winchester disk

##### Format

BACKUP C: [pathname] d: [-M] [-S]

|          |                                                                                                                                                                                                         |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| C:       | the drive designation of the Winchester disk                                                                                                                                                            |
| pathname | a slash representing the default directory, followed by one or more 1-character to 8-character subdirectory names separated by slashes; optionally preceded by the drive designation for the Winchester |
| d:       | the drive designation of the diskette onto which the copies of the Winchester disk files are copied                                                                                                     |
| -M       | switch for backup of modified files only                                                                                                                                                                |
| -S       | switch for backup of all subdirectories within the directory specified in pathname                                                                                                                      |

##### Comments

1. When you call this utility using DOS, the program called is the same as the WINCHESTER BACKUP System Utility. However, there is no screen because you provide the information the utility needs in the DOS command. The system prompts you to insert diskettes, and otherwise operates in the same manner as the WINCHESTER BACKUP utility. (See section 2.3.21.)
2. To back up all files, do not specify any pathname or use any switches in the backup procedure. To back up selected files, include a pathname, or use the -M or -S switches described below.

Using the DOS Command Processor

3. Use the -M switch to make backup files of only those files which have been modified since the last backup. The system records file creation and modification automatically regardless of the date and time that is recorded when you start the system. Therefore, you are not required to enter the date and time each time you start the system to ensure accurate backup of modified files.

4. Use the -S switch to include all subdirectories within the directory that you specified in the pathname.

#### Example

```
BACKUP C: /BIN A: -M
```

This command would back up modified files only from the default directory (BIN). The backup files would be placed on diskettes in Drive A.

#### 4.5.2 CHDIR Utility

##### Function

This utility specifies or changes the default directory.

##### Menu Option

Path - Change Directory

##### Type

Internal

##### Format 1

CHDIR [<pathname>]

##### Format 2

CD [<pathname>]

<pathname>

a slash representing the disk directory, followed by one or more 1-character to 8-character subdirectory names separated by slashes; optionally preceded by a drive designation

##### Comments

1. If <pathname> is absent, the default directory is displayed.
2. Refer to Section 1.5.2 for a detailed explanation of the path name parameter.

##### Example

CHDIR /JOEFILES/REPORTS



### 4.5.3 CHKDSK Utility

#### Function

This utility analyzes the contents of a disk, checks for inconsistencies between the directories and the File Allocation Table, and reports the number of bytes available on disk and in memory. Optionally, it restores consistency, reports the number of noncontiguous allocation units per file or per disk, and displays the names of files and directories as they are being processed.

#### Menu Option

Check Disk

#### Type

External, System Diskette II

#### Format

CHKDSK [<d>:] [<filespec>...] [-F] [-V]

|            |                                                                                                                                                                                  |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <d>        | a letter of the alphabet designating a drive                                                                                                                                     |
| <filespec> | a 1-character to 8-character file name; optionally preceded by a 1-character drive designation and/or a path name; optionally followed by a 1-character to 3-character extension |

#### Comments

1. If you include <filespec> in the command, CHKDSK returns the number of noncontiguous allocation units in the file. If <filespec> is \*.\* , CHKDSK returns the total number of noncontiguous allocation units in all files.
2. Including the -F switch in the command instructs CHKDSK to correct inconsistencies between the FAT and the directories.
3. Including the -V switch in the command instructs CHKDSK to display the names of directories and files as it processes them.
4. Refer to Comments on the CHECK DISK system utility in Section 2.3 for further discussion of CHKDSK.

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Example

```
chkdsk b:joestax -f -v
```

This command instructs CHKDSK to check the disk in Drive B, to correct inconsistencies, to display file names as it processes them, and to report the number of noncontiguous allocation units in the file named JOESTAX.

#### 4.5.4 CLS Utility

##### Function

This utility clears the screen leaving the DOS prompt in the upper left-hand corner.

##### Type

Internal

##### Format

CLS

##### Comments

The screen does not clear automatically when a DOS command has finished executing. Instead, the DOS prompt appears below the last line displayed by the previous command. This utility clears the screen of the previous contents and displays the DOS prompt in the upper left-hand corner of the screen.



#### 4.5.5 COPY Utility

##### Function

This utility can make a copy of a file, with or without changing the file name. It can also create files.

##### Menu Option

File Copy

##### NOTE:

This utility is different from WANGCOPY, which is called when FILE COPY is selected from the System Utilities Menu.

##### Type

Internal

##### Format 1

COPY <filespec>

##### Format 2

COPY <filespec> <d>:

##### Format 3

COPY <filespec> <filename>[.<ext>]

Format 4

COPY <filespec> <d>:<filename>[.<ext>]

|            |                                                                                                                                                                                  |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <filespec> | a 1-character to 8-character file name; optionally preceded by a 1-character drive designation and/or a path name; optionally followed by a 1-character to 3-character extension |
| <d>        | a letter of the alphabet designating a drive                                                                                                                                     |
| <filename> | a 1-character to 8-character file name                                                                                                                                           |
| <ext>      | a 1-character to 3-character file name extension                                                                                                                                 |

Comments

1. Formats 1 and 2 allow you to copy a file without changing the file name or extension. Formats 3 and 4 allow you to copy a file and give it a new name or extension. A disk cannot have two files with the same file name and extension. If you want the original and the copy to have the same name and extension, you must copy the file to a different disk.

2. Format 1 copies the original file, with the same name and extension, to the default disk drive. The drive designated in <filespec> must not be the default drive. For example, if the default drive is B, the command:

COPY a:testfile.bat

copies the file testfile.bat from the disk in Drive A to the disk in Drive B. The file name and extension remain the same.

3. Format 2 copies the original file, with the same name and extension, from the drive designated in <filespec> or the default drive to another drive. For example, if the default drive is B, the command:

COPY ?.exe a:

copies all files on Drive B's disk with a one-character file name and the extension .exe to Drive A's disk. The file name and extension remain the same.

4. Format 3 copies the original file to a file with a new name and/or extension on the default drive. For example, if the default drive has a file named testfile.old, the following command makes a copy of it called testfile.new on the same drive:

COPY testfile.old testfile.new

Using the DOS Command Processor

**CAUTION:**

If the output file has the same name as a file already on the disk specified for the output file, the old file is overwritten.

5. You can use all device file names for the original and duplicate files of COPY commands. (Refer to Section 1.4.2.) For example, the command:

COPY <filespec> CON:

displays the contents of <filespec> on the monitor. The command is equivalent to TYPE <filespec>. (Refer to the TYPE utility.)

6. To create a file using the COPY utility, specify CON as the input file and supply some other file as the output file. By using CON for the input file, you send whatever you type after EXECUTE to the disk under the output file ID. You must terminate the last line in the file by pressing RETURN, then press CONTROL + Z followed by another RETURN. Before you press CONTROL + Z, you can delete the file by pressing CONTROL + C.

7. For an explanation of the use of all-purpose characters with this utility, refer to Comment 4 on the FILE COPY utility in Section 2.3.6

**CAUTION:**

When you use all-purpose characters, the file names you specify for the output files may already exist on the disk you are writing to. Creating the output files overwrites the existing files.



#### 4.5.6 COPY + Utility

##### Function

This utility makes a combined file by appending one or more files to another file. Separate copies of the original files can be retained.

##### Menu Option

File Copy With Append

##### NOTE:

This utility is different from WANGCOPY which is called when FILE COPY WITH APPEND is selected from the System Utilities Menu.

##### Type

Internal

##### Format 1

COPY [-B] <filespec> + <filespec>... [<filespec>]

##### Format 2

COPY <filespec>[-switch] + <filespec>[-switch]... [<filespec>[-switch]]

<filespec>            a 1-character to 8-character file name; optionally preceded by a 1-character drive designation and/or a path name; optionally followed by a 1-character to 3-character extension

<switch>            the letter A or B

Using the DOS Command Processor

## Comments

1. The combined file has the file name and extension (if any) specified by the final optional <filespec> (the <filespec> not preceded by "+"). For example, the command:

```
COPY A.XYZ + B.COM+BIC.TXT BIGFILE.CRP
```

combines the contents of A.XYZ, B.COM, and BIC.TXT and places them in the file on the default drive called BIGFILE.CRP.

2. If you do not include the final <filespec>, the name and extension of the combined file is that of the first <filespec>, and a separate copy of the first file is not retained. If you want a separate copy of the first file, the combined file must have a different <filespec>.

3. The COPY + operation is normally carried out for files in the text (or ASCII) mode. Files created with the Editor, and source files of the different programming languages, are in text mode. These text files may contain a code, 1AH, indicating that CONTROL + Z was pressed when the file was created or edited. The computer interprets this code as the end-of-file mark.

The -B option in Format 1 tells the computer that the files to be combined are "binary" files rather than text files. Files created by the Linker, Assembler, or one of the compilers are binary files. Binary files do not use 1AH as an end-of-file mark. Therefore, when you are combining binary files, you must override the normal interpretation of the end-of-file with the -B switch. -B forces the COPY + utility to use the physical end-of-file determined by the file length recorded in the Disk Directory. For example:

```
COPY -B A.COM + B.COM
```

4. Format 2 allows you to combine text and binary files by using -B on binary files and -A on text files. A switch (-A or -B) takes effect on the file after which it is placed. The switch applies to all subsequent files until another switch appears.

An -A or -B switch on the output file determines whether or not a CONTROL + Z is placed at the end of the file. Text files read while -A is in effect have CONTROL + Z stripped off. If -A is in effect when the file is written, a single CONTROL + Z is put back. Thus, you could append additional CONTROL + Z's with commands such as:

```
COPY A.ASM-B + B.ASM-B C.ASM-A
```

This occurs because the -B on the first two files prevents the CONTROL + Z's from being stripped off, and the -A on the last file puts one on.

The primary practical application may be the reverse where a file has CONTROL + Z stripped from it. For example:

COPY PROG.COM-B + ERRS.TXT-A NEWPROG.COM-B

In this example, it is assumed that ERRS.TXT was generated by the Editor, but the program it is appended to treats it as consisting of data constants (error messages). Since the result is an executable, binary file, a CONTROL + Z at the end is not needed. (For an explanation of files produced by the Linker, refer to The Wang Professional Computer Program Development Guide. For an explanation of files produced by the Assembler and compilers, refer to the appropriate language manual listed in The Wang Professional Computer Documentation Guide.)

6. For an explanation of the use of all-purpose characters with this utility, refer to Comments 4 and 5 on the FILE COPY WITH APPEND utility in Section 2.3.7.

Using the DOS Command Processor



#### 4.5.7 CTTY Utility

##### Function

This utility changes the device that receives the input/output normally sent to the monitor.

##### Type

Internal

##### Format

CTTY /DEV/<dev>

<dev>                      a file name reserved for a device

##### Comments

1. With CTTY you can make your printer act as a monitor. You can also use a monitor on another system linked to your system by a communications device. For example, if you specify a printer as your terminal, whatever input you send to the computer from the keyboard and whatever output the computer returns to you appears not on the monitor, but as printed copy. Thus, you can use this utility to save a trace of the execution of a batch file. This utility is also useful if your monitor is malfunctioning.

2. For a list of reserved device file names, refer to Section 1.4.2.

##### Examples

CTTY /DEV/AUX

This command would move all monitor I/O to the AUX port.

CTTY /DEV/CON

This command would move the I/O back to the normal device.

#### 4.5.8 DATE Utility

##### Function

This utility displays the current date, as known to the computer, and permits you to enter a new date. This date resets the calendar that records the creation or modification of files.

##### Menu Option

Set Date

##### Type

Internal

##### Format

DATE [<mm>-<dd>-<yy[yy]>]

|               |                                 |
|---------------|---------------------------------|
| <mm> (month)  | one or two digits from 01 to 12 |
| <dd> (day)    | one or two digits from 01 to 31 |
| <yy> (year)   | two digits from 80 to 99        |
| <yyyy> (year) | four digits from 1980 to 2099   |

##### Comments

1. The format of the Date display is determined by the SET NATIONAL DEFAULTS utility. (Refer to Section 2.3.) You must enter the new date in the same format. The remaining comments assume the United States standard (month/day/year) is in effect.
2. If you enter a DATE command without any parameters, the command returns the following prompt:

Current date is mm-dd-yy  
Enter new date: \_

Using the DOS Command Processor

To leave the date unchanged, press RETURN. To change the date, enter a valid set of numerals and press RETURN.

3. If you enter a DATE command with valid parameter values, the specified date is taken, and no other message appears.

4. You can separate the month, day, and year entries by a hyphen (-) or a slash (/). If an invalid date or separator is used in a DATE command, you receive an "Invalid date" message and a prompt to enter a valid date:

```
Invalid date
Enter new date: _
```

#### Example

DATE

```
Current date is 11-08-83
Enter new date: 11/9/83 _
```



#### 4.5.9 DEL Utility

##### Function

This utility deletes a file or a group of files from a disk.

##### Menu Option

File Delete

##### Type

Internal

##### Format 1

DEL <filespec>

##### Format 2

ERASE <filespec>

|            |                                                                                                                                                                                                                       |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <filespec> | a 1-character to 8-character file name; optionally preceded by a 1-character drive designation and/or a path name; optionally followed by a 1- to 3-character extension; maximum 255 characters including punctuation |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

##### Comments

Refer to Comments on the FILE DELETE system utility in Section 2.3.8.

##### Example

DEL testfile.1

Using the DOS Command Processor

#### 4.5.10 DIR Utility

##### Function

This utility displays an entire directory, specific directory entries, or the file names in a directory on the monitor screen.

##### Menu Option

Directory Display

##### Type

Internal

##### Format

DIR [<d>:] [<filename>] [<ext>] [-P] [-W]

|            |                                                  |
|------------|--------------------------------------------------|
| <d>        | a letter of the alphabet designating a drive     |
| <filename> | a 1-character to 8-character file name           |
| <ext>      | a 1-character to 3-character file name extension |

##### Comments

1. You can use the all-purpose characters (?) and (\*) for the file name and extension parameters, as explained in Section 1.4.3. As a result, the commands in each row of the following list are equivalent:

|          |            |
|----------|------------|
| DIR      | DIR *.*    |
| DIR FILE | DIR FILE.* |
| DIR .EXT | DIR *.EXT  |
| DIR .    | DIR *.     |

2. The display produced by this utility scrolls upward until all the entries have appeared on the screen. -P (for page mode) causes the scrolling to pause each time the display fills the screen. To resume the scroll, press any key. If you do not use page mode, you can stop the scrolling by pressing CONTROL + S. Pressing CONTROL + Q resumes the scroll.

3. -W (for wide display) causes only file names and extensions to appear. Five entries appear per line of display.

4. For further explanation, refer to Comments on the DIRECTORY DISPLAY system utility in Section 2.3.

Example

DIR ?FILE.EXE

This command could produce a display like:

|           |       |          |        |
|-----------|-------|----------|--------|
| AFILE.EXE | 100   | 12-03-83 | 3:17a  |
| BFILE.EXE | 94755 | 12-10-83 | 17:34p |
| CFILE.EXE | 3846  | 12-11-83 | 15:15p |



#### 4.5.11 ECHO Utility

##### Function

This utility turns the console display on or off. It can also display a message.

##### Type

Internal

##### Format 1

ECHO

##### Format 2

ECHO ON

##### Format 3

ECHO OFF

##### Format 4

ECHO <message>

##### Comments

1. Normally, commands in a batch file appear on the monitor screen as the computer executes them. ECHO OFF turns this feature off. ECHO ON turns it back on. PAUSE and REM messages do not appear when ECHO mode is off.
2. Format 1 displays a message stating the current ECHO mode: on or off.
3. Format 4 displays a message.

##### Example

ECHO OFF

This command cancels the screen display of the commands in a batch file.

#### 4.5.12 For...IN...DO Utility

##### Function

This utility allows instructions to be executed repeatedly with different parameter values.

##### Type

Internal

##### Format

FOR%%<c> IN <set> DO <command>

|           |                                                                               |
|-----------|-------------------------------------------------------------------------------|
| <c>       | any character                                                                 |
| <(set)>   | 0 or more file specifications or DOS command keywords enclosed in parentheses |
| <command> | a DOS command or a batch file specification                                   |

##### Comments

1. The %%<c> variable is sequentially set to each member of <(set)>, and the <command> is executed. The double percent sign distinguishes the variable from a dummy parameter. (For dummy parameters, refer to Section 4.6.2.) If you use this command outside of a batch file, use only one percent sign.
2. If a member of <(set)> is an expression involving \* and/or ?, then the variable is set to each matching pattern on the disk. Only one item using all-purpose characters can be in the set. After the first such item, other items using all-purpose characters are ignored.
3. The words IN and DO must appear in uppercase.

Using the DOS Command Processor

Examples

```
For %%f IN (*.ASM) Do MASM %%f;
```

This example executes program MASM for each file on the disk with the extension .ASM.

```
For %%f IN (FOO BAR BLECH) DO REM %%f found
```

This example displays the message "<filename> found" for the files named FOO, BAR, AND BLECH.



#### 4.5.13 FORMAT Utility

##### Function

This utility prepares a disk to accept files by initializing the disk directory, File Allocation Table, and other areas of the disk and by analyzing the disk for any defective tracks.

##### Menu Option

Disk Format

##### Type

External, System Diskette II

##### Format

FORMAT [<d>:][-<switch>]

|          |                                                                                                                                                                        |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <d>      | a letter of the alphabet designating a drive                                                                                                                           |
| <switch> | digits indicating a diskette's capacity and the number of sectors per track, as defined in Comment 1, or the letters S, G, and W which modify the command's operation. |

##### Comments

1. This utility treats the diskette as a double-sided, double-density, 360KB diskette and formats it with nine sectors per track, unless you specify otherwise by supplying a switch. To format a double-sided, double-density, 320KB diskette with eight sectors per track, specify -8 as the switch. To format a single-sided, double-density, 180KB diskette with nine sectors per track, specify -1 as the switch. To format a single-sided, double-density, 160KB diskette with eight sectors per track, specify a switch of -1 followed by -8 (-1-8).

2. This command can also be used to transfer system files (BIOS.SYS, MSDOS.SYS, AND COMMAND.COM) automatically after the disk format is completed. To use this option, add -S to the end of the format command as follows:

FORMAT -S

Using the DOS Command Processor

First, the system prompts you to insert the DOS diskette (System Diskette I) into Drive A, as shown below.

Format Version 2.0.15

Insert DOS disk in Drive A:  
and strike any key when ready

After you insert System Diskette I into Drive A, the system copies the system files into memory to be transferred to the new diskette after it is formatted. When the copy is complete, the system prompts for the new diskette. Remove System Diskette I and insert the blank diskette.

The message "System transferred" is displayed on the screen to inform you that the system files have been copied to the new diskette. You may also use the -S option with this command from the "Other" selection on the Main System Menu.

3. You can also transfer CONFIG.SYS along with the system files by using the -G switch. The command is as follows:

FORMAT -S -G

Again, the system prompts you to load the DOS diskette (System Diskette I) into Drive A. It then completes the format as described in Comment 2, except that it transfers CONFIG.SYS and the other system files.

4. To format a 10 MB Winchester disk, use the -W switch. Assuming that the Winchester disk is assigned to Drive C, you should also include the drive designation, as follows:

FORMAT C: -W

When formatting a Winchester disk, you cannot use the switches -1 or -8 because these switches refer exclusively to floppy diskettes. If you do use these switches with the -W switch, an error results and the format utility is not run.

5. For additional information, refer to Comments on the DISK FORMAT system utility in Section 2.3.4.

#### Example

FORMAT B:

This command causes the computer to display the following message:

Insert new disk for Drive B:  
and strike any key when ready

After you insert the new disk and strike a key, formatting is initiated and the following message appears:

Formatting. . .

When the formatting is completed, the following prompt appears:

Volume label (11 characters, RETURN for none)?

When you press RETURN, the computer displays the following message:

Format completed. . .

nnnnnn bytes total disk space  
nnnnnn bytes available on disk

Format another (Y/N)?\_

Press Y to format another disk or N to cease formatting.



#### 4.5.14 GOTO Utility

##### Function

In a batch file, this utility transfers control to the line after a label.

##### Type

Internal

##### Format

GOTO <label>

<label>                    1 to 8 characters

##### Comments

1. The line referenced by <label> must begin with a colon. Control transfers to the commands that begin at the next line after label line.
2. If the label does not exist, the current batch file terminates.

##### Example

```
:foo
REM looping...
GOTO foo
```

This example produces an infinite repetition of the message: REM looping...

#### 4.5.15 IF Utility

##### Function

This utility allows conditional execution of commands.

##### Type

Internal

##### Format 1

IF <condition> <command>

##### Format 2

IF NOT <condition> <command>

<condition>            one of the following conditions explained in  
                         Comments 4 through 6, respectively:

                         ERRORLEVEL <number>

                         <string1> == <string2>

                         EXIST <filespec>

##### Comments

1. With Format 1, when the <condition> is true, then the <command> is executed, otherwise, the <command> is skipped.
2. With Format 2, when the <condition> is false, then the <command> is executed, otherwise, the <command> is skipped.
3. The words ERRORLEVEL, EXIST, and NOT must be in uppercase.
4. To use the ERRORLEVEL <number> condition, the program that executed immediately preceding this command must be written to return an exit code. (Refer to The Wang Professional Computer Program Development Guide.) The ERRORLEVEL <number> condition is true if, and only if, the previous program had an exit code of <number> or higher. Results will be undefined if the program that executed immediately preceding this command did not return an exit code.

Using the DOS Command Processor

5. The `<string1> == <string2>` condition is true if, and only if, `<string1>` and `<string2>` are identical (i.e., equal) after parameter substitution. Strings may not have embedded delimiters.
6. `EXIST <filespec>`. True if, and only if, `<filespec>` exists.

#### Example

```
IF NOT EXIST /tmp/foo ECHO Can't find file /tmp/foo
```

This example displays the message "Can't find /tmp/foo" if a file named FOO does not exist in a subdirectory named TMP.



#### 4.5.16 MENUICMP Utility

##### Function

This utility modifies existing menus and creates new menus.

##### Menu Option

Modify System Menus

##### Type

External, System Diskette I

##### Format

MENUICMP

##### Comments

When you call this utility using DOS, the program called is the same as the one for the MODIFY SYSTEM MENUS utility which you access from the System Utilities Menu. Therefore, you work with the same prompts, screens, and information described in Section 2.3.11 on the MODIFY SYSTEM MENUS system utility.

Using the DOS Command Processor

#### 4.5.17 MKDIR Utility

##### Function

This utility creates a new subdirectory.

##### Menu Option

Path - Make Directory

##### Type

Internal

##### Format 1

MKDIR <pathname>

##### Format 2

MD <pathname>

<pathname>

a slash representing the disk directory, followed by one or more 1-character to 8-character subdirectory names separated by slashes; optionally preceded by a drive designation

##### Comments

Refer to Comments on the PATH - MAKE DIRECTORY system utility in Section 2.3.13.

##### Example

MKDIR /JOESFILE/PAYMENTS/TAXES

This command creates a subdirectory named TAXES listed in the subdirectory named PAYMENTS.

#### 4.5.18 PATH Utility

##### Function

This utility defines the directories that are searched when a referenced file is not found in either the default directory or in the directory designated in the file specification. Optionally, it displays the current alternate path names.

##### Menu Option

Path - Select Alternates

##### Type

Internal

##### Format 1

PATH [<pathname>[;<pathname>...]]

##### Format 2

PATH=[<pathname>[;<pathname>...]]

|            |                                                                                                                                                                                 |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <pathname> | a slash representing the disk directory, followed by one or more 1-character to 8-character subdirectory names separated by slashes; optionally preceded by a drive designation |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

##### Comments

1. You must separate the path names with a semicolon.
2. You may supply a single semicolon as the sole parameter value. This instructs the computer to search only the default directory.
3. Entering a PATH command with no parameters causes the current alternate path names to appear on the screen.
4. For further explanation, refer to Comments on the PATH - SELECT ALTERNATES system utility in Section 2.3.15.

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Example

```
PATH /JOESFILE/MPLOYEES;/JOESFILE/CSTOMERS;/B:JOESFILE/FRIENDS
```

This command instructs the computer to search for files it cannot find in the default directory first in the subdirectory named EMPLOYEES, then in the subdirectory named CSTOMERS. Each of these subdirectories is referenced from a directory named JOESFILE. The example assumes that these subdirectories are on the default drive and that the default drive is not Drive B. If the computer cannot find files in these subdirectories, the command instructs it to search for files in the subdirectory named FRIENDS referenced from the directory named JOESFILE on Drive B.

4.5.19 PAUSE UtilityFunction

In batch files, this utility causes the computer to wait for you to respond to the prompt "Strike a key when ready....". Optionally, this utility displays a remark.

Type

Internal

Format

PAUSE [<remark>]

|          |                                                                 |
|----------|-----------------------------------------------------------------|
| <remark> | any combination of 121 or fewer characters,<br>including spaces |
|----------|-----------------------------------------------------------------|

Comments

1. During the execution of a batch file, you may need to change diskettes or perform some other action between the execution of commands. The PAUSE utility exists for this purpose.
2. Pressing any key causes the execution of the batch file to continue. If you press SHIFT + CANCEL, or CONTROL + C, the computer displays the prompt:

Abort batch job (Y/N)?\_

If you type Y, the batch job terminates, and the DOS prompt returns to the screen. Thus, you can use PAUSE to break a batch file into modules, allowing you to end the execution of the file at an intermediate point.

Example

PAUSE Change diskette in Drive B before continuing

#### 4.5.20 PRINT Utility

##### Function

This utility prints hardcopies of files and cancels print requests.

##### Type

External, System Diskette II

##### Format

PRINT [[[<filespec> [-P]] ...] [<filespec> -C] [<filespec>...] [-T]

|          |                                                                                                       |
|----------|-------------------------------------------------------------------------------------------------------|
| filespec | the file specification, including the pathname if required                                            |
| -P       | switch for adding a file to the print queue after a print cancellation and for setting the print mode |
| -C       | switch for deleting a file from the print queue which suspends print mode for all new print requests  |
| -T       | switch for deleting all files from the print queue which suspends print mode                          |

##### Comments

1. This utility can be accessed only from the DOS Command Processor or from the "Other" selection on the Main System Menu.
2. When you invoke the PRINT utility, the following message appears:

Print Version 1.2

Now the system is ready to accept the PRINT command. If your system has both a serial printer and a parallel printer, and you intend to use both during one print session, you have to run the PRINT REDIRECT utility to redirect the system to the correct printer port. Refer to The Wang Professional Computer Introductory Guide, Appendix I, for a complete description of how to use this utility. For example, if you wanted to print two files with the parallel printer and then switch to print additional files with the serial printer, you would have to wait until the files are printed, then exit the DOS Command Processor, and return to the Main System Menu. From the Main System Menu, select the Printer Support option. Then, select the Redirect to Serial Port #1 option. After you have run this utility, you can re-enter the DOS Command Processor, invoke the PRINT utility, and submit requests for printing for the serial printer.

Using the DOS Command Processor



## NOTE:

If you need to disable the print drivers to use the transparent mode for printing items such as graphics, refer to The Wang Professional Computer Introductory Guide for instructions on how to load the Transparency Mode utility and run it.

3. You can add either one or multiple files to the print queue. To add multiple files, list the filespecs, separated by a space as follows:

```
PRINT file1 file2 file3 file4
```

At the end of each printed file, the system automatically adds a form feed so that the next item to be printed starts on a new page. With multiple file printing, the system inserts the form feed between files.

The number of files that can be sent to the print queue at one time is limited to 10 files. Each file name cannot exceed 64 bytes. In listing files, you cannot use the all-purpose characters "\*" and "?" to refer to more than one file. You must list each file separately, using individual filespecs.

After you have sent a print request, the system displays the file currently being printed and the print queue as follows:

```
Now printing file1
```

```
file2 is in queue
```

```
file3 is in queue
```

```
file4 is in queue
```

4. To cancel individual files from the print queue, use the -C switch with the filespec(s) as follows:

```
PRINT file2 -C file4
```

You do not need to enter the -C after each filespec. Once you declare the individual file cancellation mode, all files that follow without specifying another switch, will be cancelled as well. After the file is deleted, the message "File cancelled by operator" is printed on the list device.

When you use -C to cancel a print request, all the other files in the queue are printed without change. However, to add new files to the queue, you must use the -P qualifier because print cancellations suspend print mode for all files not on the queue. For example, if you cancelled printing of file2 and file4, and you wanted to add file6 and file7 to the print queue, you would use the following:

```
PRINT file6 -P file7
```

You have to use the -P only for the first filespec after a cancellation.

5. Use the -T switch, which does not require a filespec, to delete all files from the print queue. The message "All files cancelled by operator" is printed on the list device to indicate that the print queue has been emptied. Similar to the -C cancellation of individual files, -T suspends print mode for all subsequent print requests. Therefore, to send a new file for printing, you have to use the -P qualifier for the first filespec.

6. If you enter just PRINT without any qualifiers or filespecs, the print queue is displayed on the screen.

7. For proper printing of a file, you should first save the file in ASCII format. All files saved as text files are in ASCII format, including all word processing documents, source programs for compiled languages such as Pascal and COBOL, and all files created with the Text Editor. Interpretive BASIC files can be saved in ASCII format using the ASCII option with the SAVE command (refer to The Wang Professional Computer Interpretive BASIC Language Guide). For other files saved in binary format, you can use the DOS command, COPY +, to change them to ASCII (refer to Section 4.5.6). Otherwise, the hardcopy of the file may not be legible because all characters, including control characters, line feeds, etc. would be printed.

8. Within one PRINT command, you can use a combination of switches. Each time you want to switch from a print request to a print cancellation, you have to include the switch after the filespec. For example, if you wanted to delete a file from the print queue and add two new files, you would write the following:

```
PRINT file3 -C file5 -P file7
```

9. You cannot reorder the print queue, except by deleting a file and then re-entering it to the end of the queue. For example, you could empty the print queue and then re-issue print requests, as follows:

```
PRINT -T file3 -P file4 file2 file6
```

#### 4.5.20 REM Utility

##### Function

This utility displays remarks during the execution of a batch file. The remark appears when the execution of the batch file reaches the REM command.

##### Type

Internal

##### Format

REM <remark>

<remark>                      any combination of 123 or fewer characters,  
                                 including spaces

##### Comments

1. The separator between the keyword REM and the remark can be a space, tab, or comma.
2. A REM command without a remark causes a blank line in the display of the batch file.
3. REM does not cause a pause in the execution of the batch file. To suspend execution, use the PAUSE utility.

##### Example

REM This is the weekly calendar program



#### 4.5.21 RENAME Utility

##### Function

This utility changes the name of a file.

##### Menu Option

File Rename

##### Type

Internal

##### Format 1

RENAME <filespec> <filename> [.<ext>]

##### Format 2

REN <filespec> <filename> [.<ext>]

|            |                                                                                                                                                                                  |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <filespec> | a 1-character to 8-character file name; optionally preceded by a 1-character drive designation and/or a path name; optionally followed by a 1-character to 3-character extension |
| <d>        | a letter of the alphabet designating a drive                                                                                                                                     |
| <filename> | a 1-character to 8-character file name                                                                                                                                           |
| <ext>      | a 1-character to 3-character file name extension                                                                                                                                 |

##### Comments

Refer to Comments on the FILE RENAME system utility, in Section 2.3.10.

##### Example

REN testfile.abc testfile.xyz

#### 4.5.22 RESTORE Utility

##### Function

This utility copies files created by the WINCHESTER BACKUP utility from a diskette onto the Winchester disk.

##### Type

External, on a separate diskette provided with the Winchester disk

##### Format

RESTORE

##### Comments

1. Once you have called this utility from the DOS command processor, the same screens used in the WINCHESTER RESTORE system utilities appear. Proceed in the same manner as you would for that utility (see section 2.3.22).

##### Example

RESTORE

Using the DOS Command Processor

#### 4.5.23 RMDIR Utility

##### Function

This utility removes an empty subdirectory from a disk.

##### Menu Option

Path - Remove Directory

##### Type

Internal

##### Format 1

RMDIR <pathname>

##### Format 2

RD <pathname>

<pathname>

a slash representing the disk directory, followed by one or more 1-character to 8-character subdirectory names separated by slashes; optionally preceded by a drive designation

##### Comments

Refer to Comments on the DIRECTORY - REMOVE PATH system utility in Section 2.3.14.

##### Example

RMDIR /JOESFILE/PAYMENTS/TAXES

This command removes the subdirectory named TAXES listed in the subdirectory named PAYMENTS.



#### 4.5.24 SHIFT Utility

##### Function

In a batch file, this utility allows you to enter more than 10 parameter values on the command line.

##### Type

Internal

##### Format

SHIFT

##### Comments

You are limited to having 10 dummy parameters, %0 through %9, in a batch file. (Refer to Section 4.6.2.) This utility allows the batch file to process more than 10 values for the dummy parameters. If there are more than 10 parameters given on a command line, then those that appear after the 10th (%9) will be shifted one at a time into %9 by successive SHIFT commands.

##### Example

You can write a batch file to display the directory entries for 10 files by using dummy parameters %0 to %9. For instance,

```
dir %0
dir %1
.
.
.
dir %9
```

Using the DOS Command Processor

By adding SHIFT commands to this file, you can display the directory for one file more for each command added. For instance,

```
dir %0
dir %1
.
.
dir %9
SHIFT
dir %9
SHIFT
dir %9
SHIFT
dir %9
```

4.5.25 TIME UtilityFunction

This utility displays the current time, as known to the computer, and permits you to enter a new time. This time resets the clock that records the creation or modification of files.

Menu Option

Set Time

Type

Internal

Format

TIME [<hh>[:<mm>[:<ss>]]]

|               |                                 |
|---------------|---------------------------------|
| <hh> (hour)   | one or two digits from 00 to 23 |
| <mm> (minute) | one or two digits from 00 to 59 |
| <ss> (second) | one or two digits from 00 to 59 |

Comments

1. The format of the Time display is determined by the SET NATIONAL DEFAULTS utility (refer to Section 2.3.19) You must enter the new time in the same format. The remaining comments assume the United States standard (hour:minute:second) is in effect.
2. If you enter a TIME command without parameters, the following prompt appears:

Current time is hh:mm:ss.cc  
Enter new time:

The parameter cc refers to hundredths of seconds. Simply press the EXEC key if you do not want to change the time shown.



3. To change the time, enter new hour, minute, and second (not hundredths of seconds) parameter values and press the EXEC key. You must separate the hour, minute, and second entries with a colon.

4. Optionally, a new time can be given as an entry in a TIME command, as in:

```
TIME 8:20:00
```

If the parameter values or separators are not legal, the computer returns the message:

```
Invalid time
Enter new time: _
```

The computer then waits for you to enter a legal time.

#### Example

```
TIME
```

```
Current time is 01:24:16.65
Enter new time: 02:24:19
```

#### 4.5.26 TYPE Utility

##### Function

This utility displays the contents of a file on the screen.

##### Type

Internal

##### Format

TYPE <filespec>

|            |                                                                                                                                                                                  |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <filespec> | a 1-character to 8-character file name; optionally preceded by a 1-character drive designation and/or a path name; optionally followed by a 1-character to 3-character extension |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

##### Comments

1. Use this utility to examine a file without modifying it. Use the DIR utility to find the name of a file, the COPY + utility to combine files, and the Editor option on the Program Development Menu to modify files.
2. The display of the file is unformatted except that tab characters are set at every eighth column, that is, Columns 8, 16, 24, etc.
3. Since the computer stores all information in code, you may not be able to read the display of files produced by the Linker, Assembler, or a compiler. These files can contain codes that do not represent letters or numbers. Among these codes are control codes that cause the computer to perform a specific action when it reads them. Thus, in addition to displaying files, the TYPE utility can cause the audio alarm to sound, forms to be inserted in the printer, and other possibly undesired actions.
4. This utility can produce more output than the screen can hold at one time. When this happens, the output displayed on the screen scrolls upward until the execution of the utility is complete. You can stop the scrolling without terminating the display by pressing CONTROL + S. To continue the scroll, press CONTROL + Q.

##### Example

TYPE B:testfile

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#### 4.5.27 VER Utility

##### Function

This utility displays the version number of the operating system.

##### Type

Internal

##### Format

VER

##### Comments

MS-DOS system utilities include VER because some manufacturers' systems may not automatically display the version number of the operating system as the Wang PC does.



#### 4.5.28 VERIFY Utility

##### Function

This utility compares input to output when the computer creates, modifies, or copies files.

##### Menu Option

Write Verify

##### Type

Internal

##### Format 1

VERIFY ON

##### Format 2

VERIFY OFF

##### Comments

Refer to Comments on the WRITE VERIFY system utility in Section 2.3.23.

Using the DOS Command Processor

#### 4.5.29 VOL Utility

##### Function

This utility displays the volume ID of the disk in the specified drive.

##### Type

Internal

##### Format

VOL <d>:

<d>                      any alphabetic character designating a drive

##### Comments

Refer to the description of volume IDs in Section 1.6.

#### 4.5.30 WANGCOPY Utility

##### Function

This utility makes duplicate copies of one or more files, makes combined files by appending one or more files to another, and can create files.

##### Type

External, System Diskette II

##### Menu Options

File Copy

File Copy with Append

##### Format

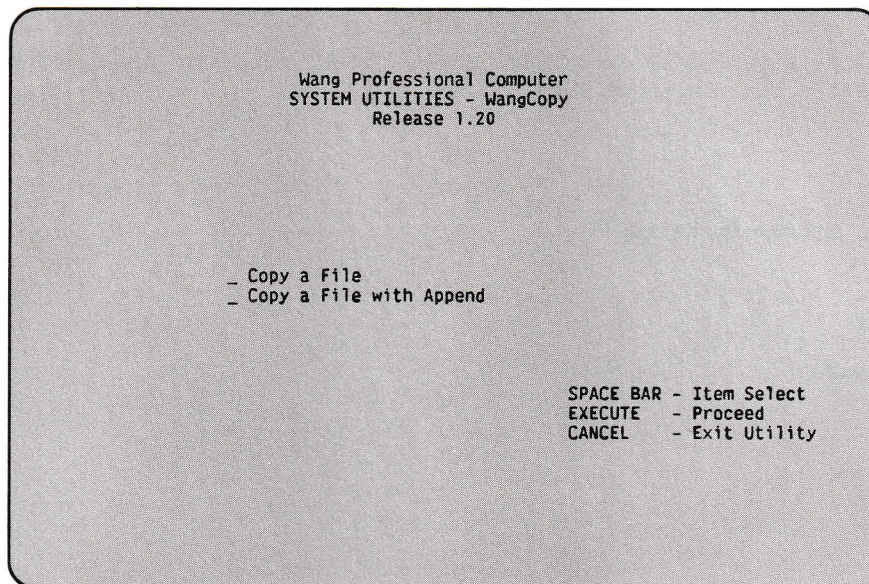
WANGCOPY

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Comments

1. When you enter this command, the following prompt appears on the screen:



Use the space bar to move the acceptance block to the option you want. Then press EXEC.

2. If you select Copy a File, the prompt displayed by the FILE COPY system utility appears on the screen. Respond to the prompt according to the instructions for that system utility in Section 2.3.6.
3. If you select Copy a File with Append, the prompt displayed by the FILE COPY WITH APPEND system utility appears on the screen. Respond to the prompt according to the instructions for that system utility in Section 2.3.7.
4. Sections 2.3.6 and 2.3.7 include complete examples for using this utility.

4.5.31 WCOMPARE UtilityFunction

This utility compares the contents of two files, displays their differences, and tabulates the number of differences.

Type

External, System Diskette II

Menu Option

File Compare

Format

WCOMPARE

Comments

When you enter this command, the following prompt appears on the screen:

```

 SYSTEM UTILITIES - FILE COMPARE
 Release 1.20

Default Pathname: A:/

File #1
 Drive: A Volume ID: _____
 File ID: _____

File #2
 Drive: A Volume ID: _____
 File ID: _____

Error Limit: __

RETURN - Next Field EXECUTE - Proceed
BACKTAB - Prior Field CANCEL - Previous Menu
```

Respond to this prompt according to the instructions for the FILE COMPARE system utility in Section 2.3.5.

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#### 4.5.32 WDSKCOPY Utility

##### Function

This utility copies the entire contents of one diskette to another and reformats the destination diskette if necessary.

##### Menu Option

Disk Copy

##### Type

External, System Diskette II

##### Format

WDSKCOPY [<d>:] [-1] [-8] [-N] [<d>:]

<d>                      a letter of the alphabet designating a drive

##### Comments

1. The drive designations must refer to different drives. The first drive contains the diskette to be copied. The second drive contains the diskette to receive the copy. Where a drive is omitted, the default drive is used.
2. The drive designations must be the first and last entries after the keyword on the command line. The order of the other entries is optional.
3. The -1 and -8 switches are for diskettes formatted under operating systems other than MS-DOS. The -1 switch indicates that the diskette is single-sided. The -8 switch indicates eight sectors per track. In the absence of either specification, the computer treats the diskette as double-sided and having nine sectors per track, respectively.
4. The -N switch instructs the computer not to verify that the copy was successful. Verify is the default.
5. For a further explanation of this utility, refer to Comments on the DISK COPY system utility in Section 2.3.3.

##### Example

```
wdskcopy a: -1 -8 -n b:
```

This command copies the contents of a single-sided diskette with eight sectors per track in Drive A to the diskette in Drive B.

Using the DOS Command Processor



4.5.33 WPCNVDOC UtilityFunction

This utility converts Wang Word Processing (WP) documents to DOS text files.

Menu Option (Conversion Aids Menu)

Convert Document to Text

Type

External, System Diskette II

Format

WPCNVDOC

Comments

1. When you enter this command, the following prompt appears on the screen:

Wang Professional Computer  
SYSTEM UTILITIES - DOCUMENT TO TEXT FILE  
Release 1.20

Input Document:

Drive: \_  
Path: \_\_\_\_\_  
File ID: \_\_\_\_\_

Output Text File:

Drive: \_  
Path: \_\_\_\_\_  
File ID: \_\_\_\_\_ Extension: \_\_\_\_

-----

EXECUTE - Proceed  
CANCEL - Return to Menu  
RETURN - Go to Next Field

2. The file name extension of the input document must be DOC.
3. The Volume ID is optional in both places.

Using the DOS Command Processor

4. If the document you enter does not exist, the utility prompts you to either respecify the document name or cancel processing. If the output text file already exists, the utility gives you the option of replacing the existing file or specifying a new name for the output file. Replacing the existing file destroys the previous contents of the file.
5. The utility reads the format line of the WP document and preserves the line length and all tab positions. As it reads the document, the utility inserts a carriage return/line feed (ODOAH) at an appropriate word break at the end of each line, using the line length determined from the format line. It also replaces WP carriage returns (83H) with carriage return/line feeds.
6. As it reads the document, the utility searches for tabs, indents, centers, and dec tabs. These are interpreted on the basis of the format line tab positions and replaced with the appropriate number of spaces. The utility also searches for merge and note characters and deletes them when found. It replaces any characters represented by hex values below 20H with a question mark. It copies all other document characters directly to the text file.
7. The utility does not attempt to interpret WP document attributes (underscore, double underscore, super/subscript, strike through, and boldface) because these have no counterpart for text files.
8. There is no limit to the size of the text file created by the program other than that imposed by the maximum size of WP documents, 75 pages. Therefore, text files created in this manner may be too large to be directly accessible through the Editor. Refer to Section 3.4 for an explanation of how to use the Editor with files too large to fit in the Editor's buffer.

#### Example

|                   |                |
|-------------------|----------------|
| Input Text File:  |                |
| Drive: B          |                |
| Path:             |                |
| File ID: RESUME3_ |                |
| Output Document:  |                |
| Drive: A          |                |
| Path:             |                |
| File ID: RESUME_  | Extension: #3_ |

This example converts a WP document on Drive B named RESUME3 with the default extension of .DOC to a text file on Drive A named RESUME.#3.



4.5.34 WPCONV UtilityFunction

This utility allows you to convert DOS text files to Wang Word Processing (WP) documents.

Menu Option (Conversion Aids Menu)

Convert Text to Document

Type

External, System Diskette II

Format

WPCONV

Comments

1. When you enter this command, the following prompt appears on the screen:

Wang Professional Computer  
SYSTEM UTILITIES - TEXT FILE TO DOCUMENT  
Release 1.20

Input Document:

Drive: \_  
Path: \_\_\_\_\_  
File ID: \_\_\_\_\_ Extension: \_\_\_\_

Output Text File:

Drive: \_  
Path: \_\_\_\_\_  
File ID: \_\_\_\_\_

-----

EXECUTE - Proceed  
CANCEL - Return to Menu  
RETURN - Go to Next Field

2. When you specify the file ID for the output document, supply only the file name which is 1 to 8 characters long. The utility supplies the default extension .DOC. A path name is not allowed.

Using the DOS Command Processor



3. The Volume ID is optional in both places.
4. If a document with the output document's name already exists, the utility displays a prompt asking whether you want to delete the existing document or supply a new name for the output file.
5. The WP document created can be no more than 75 pages, with a maximum of 4K bytes per page. If the WP document reaches this limit without completely converting the input file, the utility prompts you to supply a name for another WP document and continues converting the input file into the new document. The process of creating additional WP documents goes on until the end of the input file is found.
6. This utility translates the following text file characters into equivalent WP graphic characters:

| <u>Text File Character</u> | <u>WP Graphic Character</u> |
|----------------------------|-----------------------------|
| Tab                        | Tab                         |
| Carriage Return, Linefeed  | Carriage Return             |
| Form Feed                  | End-of-page Mark            |
| Space                      | Dotted Space                |

Certain other special characters in the text document appear as question marks in the WP document. After the utility has created the WP document, you can modify these question marks as you wish.

7. When created, the WP document has a format line specifying five spaces between tab stops, single-line spacing, and a maximum line length of 158 characters. You can modify these format characteristics as you wish.
8. This utility does not provide any of the characters in the WP document with attributes such as bold printing, double underscore, or super- and subscripting. After the utility has created the WP document, you can supply these attributes as you wish.

#### Example

Input Document:

Drive: A

Path: \_\_\_\_\_

File ID: RESUME\_      Extension: #3\_

Output Text File:

Drive: B

Path: \_\_\_\_\_

File Id: RESUME3\_

This example converts a text file on Drive A named RESUME.#3 to a WP document on Drive B named RESUME3 with the default extension of .DOC.

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## 4.6 BATCH PROCESSING

This section explains batch processing, the use of replaceable parameter values in batch files, and the automatic execution of the file AUTOEXEC.BAT.

### 4.6.1 Batch Files

The DOS batch facility allows you to place one or more commands in a file in order to submit them for processing at the same time. The computer processes the batches of commands in these files as if you had typed them sequentially at a terminal. A command in a batch file can be a DOS utility command, or it can be the file specification for a program to be run from the batch file, followed by any parameter values necessary for the execution of the program.

To create a batch file, use the Editor (refer to Chapter 3), or the COPY utility with CON as the first file specification. (Refer to Section 1.4.2.)

You must give each batch file the extension .BAT, but you submit it for execution by entering its file name without the extension. When appropriate, you can supply optional parameter values as well. The syntax for calling a batch file is as follows:

<filespec> [<parameters>]

For example, a batch file might look like this when displayed on the screen:

```
1: REM This is file NEWDISK.BAT
2: REM (.BAT extension must be given)
3: PAUSE Insert disk in B:
4: FORMAT B:-S
5: DIR B:
6: CHKDSK B:
```

To execute this batch file from the default disk drive, simply enter the file name, NEWDISK, without the .BAT extension. The result is the same as if you had entered each of the lines in the .BAT file at the terminal as individual commands. While the file is executing, each command appears on the screen, preceded by the DOS prompt. If the .BAT file contains external commands, the programs called by those commands must be on the drive designated for those commands (the default drive if you do not designate another drive).

The REM DOS utility displays remarks in batch files. The PAUSE DOS utility prompts the user with an optional message and permits either continuing or aborting execution of a batch file at a given point. Refer to Sections 4.5.19 and 4.5.21 for descriptions of PAUSE and REM.

Using the DOS Command Processor

## NOTE:

To include a remark in batch file that does not appear on screen when the file executes, put a colon at the beginning of the line. Everything on the line after the colon is ignored. Because colons which are part of a file identification are not at the beginning of a batch file line, they are not interpreted as remarks.

4.6.2 Using Replaceable Parameter Values

A batch file can include commands that operate on other files. For example, the batch file may call any of the DOS utilities that deal with files. When you create the batch file, however, you do not need to know what files you will be using the batch on. Instead, the commands in the batch file can contain "dummy" parameter values, that is, symbols you replace with file specifications when you call the batch file. You can specify up to ten dummy parameter values, using the symbols %0 through %9.

On the command line that invokes the batch file, enter the specifications for the files to be worked on after the specification for the batch file. The replacement of dummy parameter values takes place by position. That is, the first file specification parameter you supply after the batch file specification takes the place of the first dummy value, the second file specification parameter takes the place of the second dummy value, and so on.

For example, assume that the following file exists as A:ASMFILE.BAT:

```
1: REM This is A:ASMFILE.BAT
2: REM START BATCH FILE
3: COPY %1.ASM %2.ASM
5: TYPE %2.PRN
6: TYPE %0.BAT
```

To execute this .BAT file and supply parameters, enter:

```
A:ASMFILE A:MYPROG B:MYPROG
```

The result is the same as if you had entered each of the following commands at your terminal:

```
REM This is A:ASMFILE.BAT
REM START BATCH FILE
COPY A:MYPROG.ASM B:MYPROG.ASM
TYPE B:MYPROG.PRN
TYPE A:ASMFILE.BAT
```

The batch facility allows files to re-execute themselves. To write a batch file that re-executes itself, use the dummy parameter value %0. The batch facility substitutes the name of the batch command itself for %0.



#### 4.6.3 Automatic Execution

When you start or restart your system and press the EXEC key from the Date and Time screen, the operating system searches the start-up disk for the file AUTOEXEC.BAT. If a batch file with that name is on the start-up disk, the computer automatically invokes the batch facility to execute the commands contained in AUTOEXEC.BAT. The normal sequence of screens following the Date and Time screen does not take place.

#### 4.7 REPLACING THE SYSTEM SCREENS WITH THE DOS COMMAND PROCESSOR

The System Software diskettes contain two files with the name CONFIG. One file has the extension .SYS. The other has the extension .SAV. Both files contain parameter initializations for use at system start-up. The computer uses the file with the .SYS extension. As shipped by Wang Laboratories, Inc., the file CONFIG.SYS specifies that in normal operation the Date and Time Screen appears when the start-up procedures are complete. (Refer to The Wang Professional Computer Introductory Guide.)

You can cause the DOS Command Processor prompt, instead of the Date and Time screen, to appear after the start-up procedures by using the following steps:

1. Change the extension of file CONFIG.SYS.
2. Change the extension of file CONFIG.SAV to .SYS.
3. Restart the system.

The computer now uses the new CONFIG.SYS to initialize parameters. The new CONFIG.SYS instructs the computer to load the DOS Command Processor program (COMMAND.COM) instead of the system menu program (MENU DRV.R.COM).

#### CAUTION:

Always keep copies of the system files with the original CONFIG.SYS file. To ensure that you do not lose the original, do not replace the .SYS extension with .BAK. The Wang PC Editor uses .BAK as the extension for backup files that are deleted each time a file with the same name as the .BAK file is re-edited.

# APPENDICES

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## APPENDIX A MESSAGES

This appendix contains the error messages that the programs described in the Utility Programs User Guide may display. The messages are listed alphabetically, and an explanation follows each message. The explanation begins with the name of the program that displays the message. If the program is a system utility, the name is given first as it appears on the System Utilities Menu, then as it is invoked from the DOS Command Processor.

Usually, you can solve the problem that caused the message to appear by taking the action indicated in the message or the explanation. Sometimes, however, the explanation states that a problem has occurred at the system level. These problems are caused by conditions internal to the computer. The conditions may be temporary, so you should retry the operation a few times. If the problem persists, report it to the Wang Professional Computer Assistance Center at 1-800-343-1098 (617-459-5000 in Massachusetts, Alaska, or Hawaii).

### Allocation error for file <filename>

CHECK DISK (CHKDSK). The named file had an allocation unit allotted to it that did not exist (that is, an allocation unit whose number is larger than the largest possible allocation unit number). CHECK DISK truncates the file at the last valid sector.

### Attempted write-protect violation

MSDOS.SYS. The diskette is write-protected and therefore cannot be written to. To restart, insert a new diskette and press any key.

### Bad command or file name

COMMAND.COM. The preceding command is not a valid internal DOS command, and the computer could not find a file called <command-name>.COM or <command-name>.EXE on the disk in the specified drive or in the default drive.

### The Border Line May Not Be Edited

EDITOR. You attempted to write on the border of the window. To edit, you must move the cursor into the area between the borders.

Cannot load MSDOS.SYS, please re-IPL

BIOS.SYS. The computer attempted a system start-up, but could not load the operating system program MSDOS.SYS from the disk. Make sure the disk in the default drive contains MSDOS.SYS. "Re-IPL" means to restart the system.

Close Error on Input File

FILE COPY (WANGCOPY). A problem has occurred at the system level.

Close Error on Output File

FILE COPY (WANGCOPY). A problem has occurred at the system level.

Create Error on Output File

FILE COPY (WANGCOPY). A problem has occurred at the system level.

Current Directory Cannot be Removed

PATH - REMOVE DIRECTORY. You cannot remove the current default directory.

Data error reading drive <x> Abort, Retry, Ignore?

MSDOS.SYS. The computer has detected a data transmission error. The computer is waiting for you to make one of the following responses:

- A (for Abort). The computer terminates the program that requested the I/O operation.
- R (for Retry). The computer attempts the operation again.
- I (for Ignore). The computer attempts to continue the program as if the error had not occurred.

Directory error-file: <filename>

CHECK DISK (CHKDSK). The file had no valid sectors allotted to it; therefore, CHECK DISK deleted the file.

Directory Path name invalid

MENU.COM. The disk in the specified drive does not contain the path you requested. Insert a correct diskette or change the path name.

Disk Directory Error

EDITOR. Use another disk.

Messages

#### Disk Directory Is Full

EDITOR. Either delete files from the disk or use another disk for the file you are editing.

Disk error reading drive <x>  
Abort, Retry, Ignore?\_

MSDOS.SYS. A disk read error occurred. The computer attempted the operation four times. Refer to the "Data error reading drive <x>" message.

If disk read errors occur while the Debugger program (refer to The Wang Professional Computer Program Development Guide) is executing, only the first line of the message appears.

Disk error writing drive <x>  
Abort, Retry, Ignore?\_

MSDOS.SYS. A disk write error occurred. The computer retried the operation four times. Refer to the "Data error reading drive <x>" message.

If disk write errors occur while the Debugger program (refer to The Wang Professional Computer Program Development Guide) is executing, only the first line of the message appears.

#### Disk Full, Write Not Complete

EDITOR. Cancel this operation, put a new disk in the drive, and begin the operation again.

#### Disk unsuitable for system disk

DISK FORMAT (FORMAT). DISK FORMAT detected a defective track where a system file was to be written. If you use the diskette at all, format it without the system files.

#### Diskette not initialized

CHECK DISK (CHKDSK). CHECK DISK could not find the root directory or File Allocation Table on the disk. Format the disk again before using it. To save the data on the disk, you may be able, first, to copy the contents of a disk to an already formatted disk.



Divide overflow

MSDOS.SYS. A program tried to divide by zero, or an error in the program's logic caused the computer to suspend execution of the program.

Drive <x> not ready

DISK COPY (WDSKCOPY) or DISK FORMAT (FORMAT). Properly put a diskette in the drive and close the door.

Drive <x>: write protected

DISK COPY (WDSKCOPY). Use another diskette or remove the write-protect tab from the current diskette.

Duplicate file name or File not found

FILE RENAME (REN). You attempted to give a file a name already in the directory, or the file being renamed was not on the disk.

Duplicate Input File

FILE COMPARE (WCOMPARE). The file IDs for the files you are comparing must be different.

Duplicate Output File

FILE COMPARE (WCOMPARE). You gave the file being created the same ID as one of the files being compared.

ERROR - BIOS version N.NN or above required

DISK COPY (WDSKCOPY) or DISK FORMAT (FORMAT). The BIOS version number displayed when you start up your system must be equal to or greater than the number displayed in this message.

Error Closing File

FILE COMPARE (WCOMPARE). A problem has occurred at the system level.

Error in EXE file

COMMAND.COM. The relocation data the Linker program supplied contains an error. Refer to The Wang Professional Computer Program Development Guide.

Error Retrieving Message

FILE COMPARE (WCOMPARE). An error has occurred at the system level in retrieving the header to be included in the file you are creating.

Messages

Error while reading COMMAND.COM, please re-IPL

BIOS.SYS. The computer attempted a system start-up, but could not read the operating system program COMMAND.COM from disk into memory. If retrying with the same disk does not succeed, use another disk containing COMMAND.COM. "Re-IPL" means to restart the system.

File Access DENIED

MENU.COM. The file may already be opened, there may not be enough memory space available to load the file, or you may have attempted a directory search for a hidden file.

File allocation table bad, drive <x>  
Abort, Retry, Ignore?\_

MSDOS.SYS. Refer to the "Data error reading drive <x>" message. If retrying does not succeed, you must format the disk again.

File cannot be copied onto itself

COMMAND.COM. The COPY utility cannot create an output file with the same name and on the same disk as the input file. Give the output file a new name or put it on another disk.

File Close Error

FILE COPY (WANGCOPY). A problem has occurred at the system level.

File COMMAND.COM not found, please re-IPL

BIOS.SYS. The computer attempted a system start-up, but could not find the operating system file COMMAND.COM on the disk. Make sure the disk in the default drive contains COMMAND.COM. "Re-IPL" means to restart the system.

File creation error

COMMAND.COM. An attempt to add a file name to a directory failed. Use CHECK DISK to determine what condition caused the failure, e.g., a full root directory (64 entries).

File ID invalid

MENU.COM. You neglected to supply a file ID or the file ID you supplied contained invalid characters.

File not found

COMMAND.COM. A file specified in a command was not found on the disk. Reenter the command with a new file specification or with a correct disk in the specified drive. Then, press RETURN.

Messages

#### File Not Found

MENU.COM. The disk in the specified drive does not contain the file you requested. Enter a new file specification or change the disk in the drive. Then, press EXEC.

#### File Not in Disk Directory

EDITOR. The file is in a subdirectory or it is not on the disk in the specified drive. Enter a new file specification or change the disk in the drive.

#### File Open Error

FILE COPY (WANGCOPY). A problem has occurred at the system level.

#### File size error for file <filename>

CHECK DISK (CHKDSK). The size allocated for the file differs from the size listed in its directory. The directory size has been adjusted to the actual size. (The amount of useful data may be less than the size shown because the last data block may not be used fully.)

#### Filename Missing or Invalid

FILE COPY (WANGCOPY). You neglected to supply a file ID or the file ID you supplied contained invalid characters.

#### Files cross-linked: <filename> and <filename>

CHECK DISK (CHKDSK). Two files share the same allocation unit. To correct the problem, you can edit, make copies of, or delete either or both files.

#### Format failure

DISK FORMAT (FORMAT). DISK FORMAT found a disk error, or the disk drive may not be functioning properly. It may be that the diskette cannot be used, perhaps because it is not the proper type for the Wang PC. For an explanation of the proper diskette types, refer to the DISK FORMAT system utility, Section 2.3. For an explanation of how to test for a disk drive failure, refer to The Wang Professional Computer Introductory Guide.

#### Format failure/NHH

For an explanation of the code displayed with the message, refer to Appendix B.

#### Messages



### Illegal Drive Specified

EDITOR. You entered an invalid drive designation.

### Illegal Path Name Specified

EDITOR. The disk in the specified drive does not contain the path you requested. Insert a correct diskette or change the path name.

### Input File not found

MENU.COM. The disk in the specified drive does not contain the file you requested. Insert a correct diskette in the drive or change the file specification. Then, press EXEC.

### Input Filename NOT found; Re-enter

FILE COPY (WANGCOPY). MENU.COM. The disk in the specified drive does not contain the file you requested. Enter a new file specification or change the disk in the drive. Then, press EXEC.

### Input/Output Formats Incompatible

MENU.COM. You have incorrectly used all-purpose characters in the input or output file specification.

### Insert disk with batch file and strike any key when ready

COMMAND.COM. You removed the diskette holding the batch file currently in execution. To resume execution, insert a diskette with the batch file in the correct drive and press any key.

### Insert DOS disk in default drive and strike any key when ready

MSDOS.SYS and DISK FORMAT (FORMAT). The default drive does not contain a disk with the system files. Therefore, DOS cannot reload the Command Processor, and DISK FORMAT cannot load the system files.

### Insufficient disk space

COMMAND.COM. The disk does not have sufficient unused space for the file being written. Use CHECK DISK to determine the amount of available space.

### Insufficient memory for system transfer

DISK FORMAT (FORMAT). At the time you instructed the utility to transfer the system files, the files already loaded in memory occupied too much space to permit the operation. Restart your system and invoke the format utility before performing any other operations.

#### Insufficient Space for Output File

FILE COPY (WANGCOPY). The designated disk does not have enough space for the copy. Change the diskette in the drive or supply a different drive designation.

#### Invalid characters in volume id

DISK FORMAT (FORMAT). You entered a volume ID with invalid characters.

#### Invalid COMMAND.COM. Insert DOS disk in default drive and strike any key when ready

MSDOS.SYS. The Command Processor cannot be reloaded because the copy of COMMAND.COM on the diskette is incorrect. Insert a correct system diskette and press any key.

#### Invalid date

Enter new date: \_

DATE. You entered an invalid date or separator.

#### Invalid Day

MENU.COM. Enter a 2-digit number from 01 to 30, 01 to 31, or 01 to 28, depending on the month you entered. Then, press EXEC.

#### Invalid Drive Specification

COMMAND.COM or MENU.COM. You entered an invalid drive designation in a command or in a parameter supplied with a command.

#### Invalid Drive Specification/DNN

DISK FORMAT (FORMAT). An abnormal condition was detected for the drive to be formatted. Refer to Appendix B for an explanation of the code.

#### Invalid Entry

FILE COMPARE (WCOMPARE). The Error Limit field accepts numeric entries only.

#### Invalid File Access

FILE COMPARE (WCOMPARE). The file may already be opened, there may not be enough memory space available to load the file, or you may have attempted a directory search for a hidden file.

#### Invalid File Handle

FILE COMPARE (WCOMPARE). A problem has occurred at the system level.

#### Messages

#### Invalid File Specification

MENU.COM. Enter a correct file specification and press EXEC or RETURN, or press CANCEL to return to the menu.

#### Invalid File Type

FILE COPY (WANGCOPY). Your response to the File Type prompt must be A or B.

#### Invalid Filename

FILE COMPARE (WCOMPARE). You neglected to supply a file ID or the file ID you supplied contained invalid characters.

#### Invalid Filename for Wild Card Usage

FILE COPY (WANGCOPY). The way you used the all-purpose character ? or \* (wild cards) would give the output the same file specification as the input.

#### Invalid Hour

MENU.COM. Enter a 2-digit number from 00 to 23. Then, press EXEC.

#### Invalid Interrupt Executed HHHH:HHHH

BIOS.SYS. The program did not properly initialize the interrupt address. The hex numbers displayed with the message indicate the address of the interrupt instruction in the executing program.

#### Invalid Keystroke

EDITOR. The key you pressed does not function for the current Editor operation.

#### Invalid Minute

MENU.COM. Enter a 2-digit number from 00 to 59. Then, press EXEC.

#### Invalid Month

MENU.COM. Enter a 2-digit number from 01 to 12. Then, press EXEC.

#### Invalid parameter

CHECK DISK (CHKDSK) and DISK FORMAT (FORMAT). One or more of the required parameter values is missing or contains invalid characters.

#### Invalid parameters

DISK COPY (WDSKCOPY). One or more of the required parameter values is missing or contains invalid characters.



Invalid Second

MENU.COM. Enter a 2-digit number from 00 to 59. Then, press EXEC.

Invalid time  
Enter new time: \_

TIME. You entered an invalid time or separator.

Invalid Volume ID

MENU.COM. The volume ID you entered does not match the volume ID of the disk in the selected drive. Enter a new volume ID, a new drive designation, or change the disk in the drive. Then, press EXEC.

Invalid Write Count

FILE COMPARE (WCOMPARE). A problem has occurred at the system level.

Invalid Year

MENU.COM. Enter a 2-digit number from 80 to 99. Then, press EXEC.

Line Number Out of Range

EDITOR. You specified a line number that exceeds the number of lines in the file.

Maximum Command Length Exceeded

PATH - SELECT ALTERNATES. Total number of characters in a command, including drive designation and volume ID, cannot exceed 128.

Maximum of 10 Input Files Entered

FILE COPY WITH APPEND (WANGCOPY). You cannot enter more than 10 input files.

Missing file name

FILE RENAME (REN). You did not supply the second file name.

MSDOS Disk Error

EDITOR. Use another disk.

No Help Text Available

MENU.COM. Help text for the function you selected is not currently available.

No More Tabs May Be Set

EDITOR. You reached the maximum number of tab settings.

Messages

### Not Enough Memory Available

EDITOR. The file you wish to edit is too large for the buffer. Create a new file and use the LOAD PARTIAL FILE command (refer to Section 3.6) to insert a section of an old file into the new.

Not ready error reading drive <x>  
Abort, Retry, Ignore?

MSDOS.SYS. Properly put a diskette in the drive and close the door.

Object diskette may be INVALID

DISK COPY (WDSKCOPY). The system detected an error while reading the contents of the input diskette or writing them to the output diskette. Therefore, the copy created on the output diskette may be inaccurate.

Open Error on Input File

FILE COPY (WANGCOPY). A problem has occurred at the system level.

Out of Environment Space

PATH. The command you entered exceeded the maximum number of characters allowed.

Path Access DENIED

PATH - MAKE DIRECTORY (MKDIR) or PATH - REMOVE DIRECTORY (RMDIR). You cannot create a path that already exists on the disk or remove a path, unless it is empty.

Path Not Found

MENU.COM. The disk in the specified drive does not contain the path you requested. Insert a correct diskette or change the path name. Then, press EXEC.

Permanent read error on source/track NN

DISK COPY (WDSKCOPY). The computer encountered an error while reading a track from the input diskette. Therefore, the copy may be invalid.

Permanent write error on object/track NN

DISK COPY (WDSKCOPY). An error occurred while the computer was writing a track on the output diskette. Therefore, the copy may be invalid.

Please Save Text and Reload

EDITOR. Due to memory usage, the system cannot efficiently handle the text you are adding.

Messages

Printer power is off

COMMAND.COM. The printer is not connected on or the proper device driver for the printer is not installed.

Program too big to fit in memory

COMMAND.COM. The program cannot be loaded because not enough memory space is available.

Range Contains Target Line Number

EDITOR. The target line number must not be included in the range.

Read Access Denied,

FILE COMPARE (WCOMPARE). A problem has occurred at the system level.

Response must be "Y" or "N"

MENU.COM. Enter a Y or a N and press EXEC.

Sector not found error reading drive <x>  
Abort, Retry, Ignore?\_

MSDOS.SYS. Refer to the "Data error reading drive <x>" message.

Sector not found error writing drive <x>  
Abort, Retry, Ignore?\_

MSDOS.SYS. Refer to the "Data error reading drive <x>" message.

Seek not found error reading drive <x>  
Abort, Retry, Ignore?\_

MSDOS.SYS. Refer to the "Data error reading drive <x>" message.

Seek not found error writing drive <x>  
Abort, Retry, Ignore?\_

MSDOS.SYS. Refer to the "Data error reading drive <x>" message.

Sorry, Help File ..... Not Found

MENU.COM. The disk in the specified drive does not contain the Help file you requested. Insert a correct diskette in the drive and press HELP.

Messages



Sorry, Maximum Number of Menus Already Displayed

MENU.COM. You cannot display an additional menu from this screen because you have used all the menu levels allowed.

Sorry, Menu File ..... Not Found

MENU.COM. The disk in the specified drive does not contain the menu you requested. Insert a correct diskette in the drive and press EXEC. If the file not found is MENU.DAT, this message appears on a screen containing some of the options from the Main System Menu. You can select one of these options to proceed.

Sorry, Program Not Found

MENU.COM. The disk in the specified drive does not contain the program you requested. Insert a correct diskette in the drive or change the file specification. Then, press EXEC or RETURN.

Sorry, Program ..... Not Found

MENU.COM. The disk in the specified drive does not contain the program you requested. Insert a correct diskette in the drive or change the file specification. Then, press EXEC.

SORRY Unable to Load Program

MENU.COM. Probably not enough memory space is available for the program. Press EXEC to retry or CANCEL to exit.

Start Line Must Precede End Line

EDITOR. The number you supply for the start line must be smaller than the number for the end line.

System Error: Parity

BIOS.SYS. A hardware malfunction has occurred in memory. Run System Diagnostics.

Terminate batch job (Y/N)?

MSDOS.SYS. This message is displayed if you press SHIFT + CANCEL during the execution of a batch file. Press Y to terminate the execution of the batch file. Pressing N only terminates the command executing when you pressed SHIFT + CANCEL. Execution of the batch file continues with the next command.

Text Buffer is Full

EDITOR. You have used up the memory space allocated for the file you are editing. Either clear the buffer by saving your changes or delete text from the file.

Messages

Too Many Open Files

FILE COMPARE (WCOMPARE). At the time you ran this utility, the maximum number of open files was exceeded. Retry.

Too many Text Lines in File

EDITOR. The maximum number of lines for an Editor file is 2500.

Track 0 bad - disk unusable

DISK FORMAT (FORMAT). The start-up code, File Allocation Tables, and disk directory must be written starting at Track 0. Use another disk.

Write error

MSDOS.SYS. An error occurred while DISK FORMAT was writing the start-up code or the system files.

Write Error on Output File

FILE COPY (WANGCOPY). A problem has occurred at the system level.

Write fault error writing drive <x>  
Abort, Retry, Ignore?\_

MSDOS.SYS. Refer to the "Data error reading drive <x>" message.

Write protect error formatting drive <x>

DISK FORMAT (FORMAT). Use another diskette or remove the write-protect tab from the current diskette.

Write protect error writing drive <x>  
Abort, Retry, Ignore?\_

MSDOS.SYS. Refer to the "Data error reading drive <x>" message.

NNNNNNNNNN bytes of disk space freed

CHECK DISK (CHKDSK). Disk space shown as allocated was not actually allocated and has been freed.

Messages

## APPENDIX B

### DISK FORMAT RETURN CODES

#### B.1 INTRODUCTION

This appendix explains the numeric codes returned by the DISK FORMAT system utility (and FORMAT DOS utility) in the "Format failure" and "Invalid drive specification" messages. The information in this appendix is intended for programmers. Programmers will find further explanations of the functions and terms used in this appendix in The Wang Professional Computer Program Development Guide.

#### B.2 "Format failure/NHH"

This message appears when a failure occurs in the DISK FORMAT utility. The NHH character string in this message provides information as to the type of failure that occurred. The digit N identifies the processing state of the format program at the time of failure. The current range of acceptable values for N is 1 through 9. HH is a two-digit hexadecimal number specifying the response from the BIOS or MSDOS when the failure occurred. This number belongs to one of the following three groups.

- |         |                                                                                                                       |
|---------|-----------------------------------------------------------------------------------------------------------------------|
| Group 1 | Completion code found in AL after initiating standard software BIOS interface INT 88H                                 |
| Group 2 | Status byte set by the BIOS in the request field of the RCB when the standard software BIOS interface INT 88H is used |
| Group 3 | Error code set in AL by MS-DOS as a result of an absolute disk read (INT 25H) or write (INT 26H)                      |

Table B-1 lists the possible values for the first digit, the group to which the corresponding hex code belongs, and the processing state of DISK FORMAT when the failure occurred.



Table B-1. DISK FORMAT Processing States

| First Digit | Hex Code Group | Processing state of DISK FORMAT                                                               |
|-------------|----------------|-----------------------------------------------------------------------------------------------|
| 1           | Group 2        | Set mode if formatting a floppy or disable retries if formatting a Winchester.                |
| 2           | Group 2        | Request format of a track on a floppy.                                                        |
| 3           | Group 3        | Write boot sector to formatted disk.                                                          |
| 4           | Group 1        | Set mode if formatting a floppy or disable retries if formatting a Winchester.                |
| 5           | Group 1        | Request Winchester format.                                                                    |
| 6           | Group 2        | Request Winchester format.                                                                    |
| 7           | Group 3        | On an absolute write of pattern DB6 to a Winchester, more than 40 write errors have occurred. |
| 8           | Group 1        | Disable Winchester ECC.                                                                       |
| 9           | Group 2        | Disable Winchester ECC.                                                                       |

Disk Format Return Codes

Tables B-2 through B-4 list the hex codes for each of the three groups together with the definitions for those codes.

Table B-2. Hex codes for Group 1

| Hex Code | Definition                                  |
|----------|---------------------------------------------|
| 00H      | Function completed normally                 |
| 01H      | Function index (AL) is invalid              |
| 02H      | Function specified has not been implemented |
| 03H      | Invalid parameter(s) specified              |
| 04H      | Operation impossible                        |
| 05H      | Event queue full                            |
| 06H      | Invalid QID specified                       |
| 07H      | Invalid screen index specified              |
| 08H      | Resource allocation denied                  |
| 09H      | Internal error of unspecifiable nature      |

Disk Format Return Codes

Table B-3. Hex Codes for Group 2

| Hex Code | Definition                      |
|----------|---------------------------------|
| 80H      | Function completed successfully |
| 01H      | Drive not ready                 |
| 02H      | Write protection error          |
| 03H      | CRC error                       |
| 04H      | Disk format error               |
| 05H      | Equipment malfunction error     |
| 06H      | Nonexistent drive               |
| 07H      | Function not yet implemented    |
| 08H      | Programmer error                |
| 09H      | Drive dropped ready             |
| 0AH      | Controller timed out            |
| 0BH      | Verify error                    |

Disk Format Return Codes



Table B-4. Hex Codes for Group 3

| Hex Code | Definition                         |
|----------|------------------------------------|
| 00H      | Write protect violation            |
| 01H      | Unknown unit                       |
| 02H      | Drive not ready                    |
| 03H      | Unknown command (programmer error) |
| 04H      | CRC error                          |
| 05H      | Bad drive request structure length |
| 06H      | Seek error                         |
| 07H      | Unknown media                      |
| 08H      | Sector not found                   |
| 09H      | Printer out of paper               |
| 0AH      | Write fault                        |
| 0BH      | Read fault                         |
| 0CH      | General failure                    |

Disk Format Return Codes

### B.3 "Invalid drive specification/DNN"

The computer displays this error message when it detects an abnormal condition for the drive to be formatted. D is the alphabetic designation of that drive. NN are two decimal digits identifying the abnormal condition. Table B-5 lists the possible values for NN and their definitions.

Table B-5. Abnormal Drive Conditions

| Code  | Definition                                                                                                                                                                                            |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 00-09 | Unable to access the System Configuration Table. See Group 1 codes defined for "Format failure/NHH."                                                                                                  |
| 22    | Format request for A or B. Status byte in Disk Drive Control Block is set to indicate the drives do not exist.                                                                                        |
| 23    | Drive number for drive to be formatted (i.e., A = 1,...) exceeds the number of disk drives specified in the System Configuration Table (SCT).                                                         |
| 24    | Drive to be formatted is neither A nor B. The status byte in Disk Drive Control Block is set to indicate the requested drive does not exist.                                                          |
| 25    | The drive requested for format is neither a floppy nor a Winchester.                                                                                                                                  |
| 26    | The System Configuration Table specifies less than 2 or more than 26 disk drives.                                                                                                                     |
| 27    | A or B has been requested as the drive for format, and the System Configuration Table does not identify the drive requested as being a floppy.                                                        |
| 28    | Formatting has been requested for a Winchester disk. The System Configuration Table does not specify that this disk is at least a 5 meg Winchester (i.e., must have at least 25COH 512 byte sectors). |

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What errors or faults did you find in the manual? (Please include page numbers) \_\_\_\_\_

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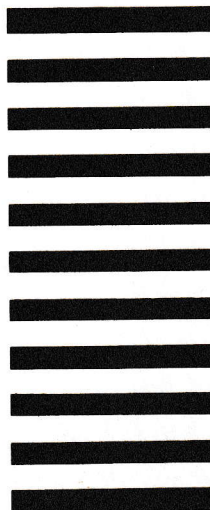
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# WANG PROFESSIONAL COMPUTER

## Utilities

### Reference Card

|                    |                                                                                          |
|--------------------|------------------------------------------------------------------------------------------|
| < parameter name > | Indicates an entry to be supplied by the user according to the rules for that parameter. |
| -                  | Indicates a switch.                                                                      |
| { }                | Indicate a choice of one of the bracketed items.                                         |
| /                  | Indicates a path name.                                                                   |
| , ;                | Function as separators, as do spaces and tabs.                                           |
| ...                | Indicate that repetition of an item is allowed.                                          |

#### SYSTEM UTILITIES

##### Parameters

|           |                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Drive     | a letter of the alphabet designating a drive                                                                                                                                                                                                                                                                                                                                                        |
| Volume ID | optional; 1 to 11 characters                                                                                                                                                                                                                                                                                                                                                                        |
| File ID   | a 1-character to 8-character file name, optionally preceded by a path name, optionally followed by a 1-character to 3-character extension; a maximum of 50 characters, including punctuation. The DIRECTORY DISPLAY and Winchester utilities accept a path name for a file ID.                                                                                                                      |
| Pathname  | a slash representing the disk directory followed by one or more subdirectory names separated by slashes; optionally preceded by a drive designation; a maximum of 8 characters per subdirectory name; path name a maximum of 50 characters, including slashes. In a file ID, the path name can begin with an entry in the default directory and ends with a slash separating it from the file name. |

#### System Utility Names, Types, and Corresponding DOS Utilities

##### System Utility

##### DOS Utility

|                                               |          |
|-----------------------------------------------|----------|
| CHECK DISK (External, Diskette II)            | CHKDSK   |
| DIRECTORY DISPLAY (Internal)                  | DIR      |
| DISK COPY (External, Diskette II)             | WDSKCOPY |
| DISK FORMAT (External, Diskette II)           | FORMAT   |
| FILE COMPARE (External, Diskette II)          | WCOMPARE |
| FILE COPY (External, Diskette II)             | WANGCOPY |
| FILE COPY WITH APPEND (External, Diskette II) | WANGCOPY |

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|                                                  |                           |
|--------------------------------------------------|---------------------------|
| FILE DISPLAY (Internal)                          | does not apply            |
| FILE RENAME (Internal)                           | RENAME or REN             |
| MODIFY SYSTEM MENUS (External, Diskette II)      | MENUCOMP                  |
| PATH - CHANGE DIRECTORY (Internal)               | CHDIR or CD               |
| PATH - MAKE DIRECTORY (Internal)                 | MKDIR or MD               |
| PATH - REMOVE DIRECTORY (Internal)               | RMDIR or RD               |
| PATH - SELECT ALTERNATES (Internal)              | PATH                      |
| SET DATE (Internal)                              | DATE                      |
| SET DEFAULT DRIVE (Internal)                     | CHDIR or CD               |
| SET KEYBOARD OPTIONS (Internal)                  | does not apply            |
| SET NATIONAL DEFAULTS (Internal)                 | does not apply            |
| SET TIME (Internal)                              | TIME                      |
| WINCHESTER BACKUP (External, separate diskette)  | BACKUP                    |
| WINCHESTER RESTORE (External, separate diskette) | RESTORE                   |
| WRITE VERIFY (Internal)                          | VERIFY ON/-<br>VERIFY OFF |

#### THE EDITOR

##### Invocation

PCEDIT [< filespec >]

##### Parameter

< filespec > a 1-character to 8-character file name; optionally preceded by either or both a 1-character drive designation and a path name; optionally followed by a 1-character 3-character extension.

#### Commands and Keystrokes

##### BACKSPACE

Press BACK SPACE.

##### CENTER MODE

Press CENTER while in floating cursor mode to invoke center mode. Press CENTER while in center mode to invoke floating cursor mode.

##### COPY LINES

Press COPY.

##### CURSOR EAST and CURSOR WEST

Press the East or West cursor control key.

##### CURSOR NORTH and CURSOR SOUTH

Press the North or South cursor control key.



## SYNTAX NOTATION

|                    |                                                                                          |
|--------------------|------------------------------------------------------------------------------------------|
| [ ]                | Indicate optional items.                                                                 |
| < parameter name > | Indicates an entry to be supplied by the user according to the rules for that parameter. |
| -                  | Indicates a switch.                                                                      |
| { }                | Indicate a choice of one of the bracketed items.                                         |
| /                  | Indicates a path name.                                                                   |
| , ; =              | Function as separators, as do spaces and tabs.                                           |
| ...                | Indicate that repetition of an item is allowed.                                          |

## SYSTEM UTILITIES

### Parameters

|           |                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Drive     | a letter of the alphabet designating a drive                                                                                                                                                                                                                                                                                                                                                        |
| Volume ID | optional; 1 to 11 characters                                                                                                                                                                                                                                                                                                                                                                        |
| File ID   | a 1-character to 8-character file name, optionally preceded by a path name, optionally followed by a 1-character to 3-character extension; a maximum of 50 characters, including punctuation. The DIRECTORY DISPLAY and Winchester utilities accept a path name for a file ID.                                                                                                                      |
| Pathname  | a slash representing the disk directory followed by one or more subdirectory names separated by slashes; optionally preceded by a drive designation; a maximum of 8 characters per subdirectory name; path name a maximum of 50 characters, including slashes. In a file ID, the path name can begin with an entry in the default directory and ends with a slash separating it from the file name. |

### System Utility Names, Types, and Corresponding DOS Utilities

| System Utility                       | DOS Utility |
|--------------------------------------|-------------|
| CHECK DISK (External, Diskette II)   | CHKDSK      |
| DIRECTORY DISPLAY (Internal)         | DIR         |
| DISK COPY (External, Diskette II)    | WDSKCOPY    |
| DISK FORMAT (External, Diskette II)  | FORMAT      |
| FILE COMPARE (External, Diskette II) | WCOMPARE    |

| System Utility                                   | DOS Utility               |
|--------------------------------------------------|---------------------------|
| FILE DELETE (Internal)                           | DEL or ERASE              |
| FILE DISPLAY (Internal)                          | does not apply            |
| FILE RENAME (Internal)                           | RENAM or REN              |
| MODIFY SYSTEM MENUS (External, Diskette II)      | MENU/CMF                  |
| PATH - CHANGE DIRECTORY (Internal)               | CHDIR or CD               |
| PATH - MAKE DIRECTORY (Internal)                 | MKDIR or MD               |
| PATH - REMOVE DIRECTORY (Internal)               | RMDIR or RD               |
| PATH - SELECT ALTERNATES (Internal)              | PATH                      |
| SET DATE (Internal)                              | DATE                      |
| SET DEFAULT DRIVE (Internal)                     | CHDIR or CD               |
| SET KEYBOARD OPTIONS (Internal)                  | does not apply            |
| SET NATIONAL DEFAULTS (Internal)                 | does not apply            |
| SET TIME (Internal)                              | TIME                      |
| W/CHGISTER BACKUP (External, separate diskette)  | BACKUP                    |
| W/CHGISTER RESTORE (External, separate diskette) | RESTORE                   |
| WRITE VERIFY (Internal)                          | VERIFY ON/-<br>VERIFY OFF |

## THE EDITOR

### Invocation

PC EDIT [**< filename >**]

### Parameter

**< filename >** a 1-character to 8-character file name, optionally preceded by either or both a 1-character drive designation and a path name; optionally followed by a 1-character to 3-character extension.

### Commands and Keystrokes

#### BACKSPACE

Press BACK SPACE.

#### CENTER MODE

Press CENTER while in floating cursor mode to invoke center mode.  
Press CENTER while in center mode to invoke floating cursor mode.

#### COPY LINES

Press COPY.

#### CURSOR EAST and CURSOR WEST

Press the East or West cursor control key.

## Commands and Keystrokes

### DELETE CHARACTER

Press DELETE.

### DELETE LINE

Press SHIFT + DELETE.

### DELETE MANY LINES

Press STOP.

### END SESSION AND SAVE CHANGES

Press SHIFT + CANCEL or CONTROL + C.

### ERASE LINE

Press SHIFT + ERASE.

### ERASE TO END

Press ERASE.

### GO TO FIRST LINE

Press SHIFT + PREV.

### GO TO LAST LINE

Press SHIFT + NEXT.

### GO TO LINE

Press GO TO.

### INSERT LINE

Press EXEC.

### INSERT MODE

Press INSERT while insert mode is off to select insert mode.  
Press INSERT while insert mode is on to turn off insert mode.

### LOAD PARTIAL FILE

Press SHIFT + INDENT.

### LOAD TEXT

Press INDENT.

### MOVE LINES

Press MOVE.

### NEXT SCREEN

Press NEXT.

### PREVIOUS SCREEN

Press PREV.

### PRINT LINES

Press PRINT.

### REPLACE

Press REPLACE or SHIFT + REPLACE.

### SAVE PARTIAL FILE



## Parameters

<mm> (month) one or two digits from 01 to 12  
 <dd> (day) one or two digits from 01 to 31  
 <yy> (year) two digits from 80 to 99  
 <yyyy> (year) four digits from 1980 to 2099  
 <hh> (hour) one or two digits from 00 to 23  
 <mm> (minute) one or two digits from 00 to 59  
 <ss> (second) one or two digits from 00 to 59

## DOS Utility Names, Types, and Formats

**BACKUP** (External, separate diskette)

BACKUP c: [<pathname>] [<d>] [-M] [-S]

**CHDIR** (Internal)

1. CHDIR [<pathname>]
2. CD [<pathname>]

**CHKDSK** (External, Diskette II)

CHKDSK [<d>] [<filespec> ...] [-F] [-V]

**CLS** (Internal)

CLS

**COPY** (Internal)

1. COPY <filespec>
2. COPY <filespec> <d>:
3. COPY <filespec> <filename> [<ext>]
4. COPY <filespec> <d>: <filename> [<ext>]

**COPY** + (Internal)

1. COPY [-B] <filespec> + <filespec> ... [<filespec>]

2. COPY <filespec> [- { $\begin{matrix} A \\ B \end{matrix}$ }] + <filespec> [- { $\begin{matrix} A \\ B \end{matrix}$ }]

... [<filespec> [- { $\begin{matrix} A \\ B \end{matrix}$ }]]

**CTTY** (Internal)

CTTY /DEV/<dev>

**DATE** (Internal)

DATE [<mm> - <dd> - <yy[yy]>]

**DEL** (Internal)

1. DEL <filespec>
2. ERASE <filespec>

**DIR** (Internal)

DIR [<d>] [<filename>] [-P] [-W]

## DOS Utility Names, Types, and Formats

**FOR ... IN ... DO** (Internal)

FOR %<c> IN <set> DO <command>

**FORMAT** (External, Diskette II)

FORMAT [<d>] [-W] [-S] [-G] [-I] [-8]

**GOTO** (Internal)

GOTO <label>

**IF** (Internal)

1. IF <condition> <command>
2. IF NOT <condition> <command>

**MENUICMP** (External, Diskette II)

MENUICMP

**MKDIR** (Internal)

1. MKDIR <pathname>
2. MD <pathname>

**PATH** (Internal)

PATH [<pathname>] [<pathname> ...]

**PAUSE** (Internal)

PAUSE [<remark>]

**PRINT** (External, Diskette II)

[[[<filespec>] [-P] ...] [<filespec> -C] [<filespec> ...] [-T]

**REM** (Internal)

REM <remark>

**RENAME** (Internal)

1. RENAME <filespec> <filename> [<ext>]
2. REN <filespec> <filename> [<ext>]

**RESTORE** (External, separate diskette)

RESTORE

**RMDIR** (Internal)

1. RMDIR <pathname>
2. RD <pathname>

**SHIFT** (Internal)

SHIFT

**TIME** (Internal)

TIME [<hh> [<mm>] [<ss>]]

**TYPE** (Internal)

TYPE <filespec>

**VER** (Internal)

VER

**VERIFY** (Internal)

1. VERIFY ON
2. VERIFY OFF

## DOS Utility Names, Types, and Formats

**WCOMPARE** (External, Diskette II)

WCOMPARE

**WDSKCOPY** (External, Diskette II)

WDSKCOPY [<d>] [-I] [-8] [-N] [<d>:]

**WPCNVDOC** (External, Diskette II)

WPCNVDOC

**WPCONV** (External, Diskette II)

WPCONV

**Switch**

**Characters**

**Definitions**

-A

ASCII format

-B

binary format

-C

cancel specified print requests

-F

correct inconsistencies

-G

copy CONFIG.SYS along with other system files

-M

copy only files modified since the last backup

-N

no verification

-P

display one page at a time

-P

enter to the print queue

-S

copy every entry in every subdirectory

-S

transfer BIOS.SYS, MSDOS.SYS, and COMMAND.COM

-T

empty the print queue

-V

display directory and file names as processed

-W

display file names only

-W

format the Winchester disk

-I

format a single-sided diskette

-8

8 sectors per track format



## SEARCH

Press SEARCH or SHIFT + SEARCH.

## SET TABS

Press DEC TAB.

## SET WIDTH

Press FORMAT.

## SHIFT + CURSOR EAST and SHIFT + CURSOR WEST

Press SHIFT + the East or West cursor control key.

## SHIFT + NEXT and SHIFT + PREV

Press SHIFT + NEXT or SHIFT + PREV.

## TAB

Press TAB.

# THE DOS COMMAND PROCESSOR

The formats of DOS commands employ both parameters and switches. The parameters are defined here. Switches are indicated by a capital letter preceded by a hyphen (-). The switches and their definitions appear after the list of DOS utilities.

## Parameters

- < c > any character
- < command > a DOS command or a batch file specification
- < condition > one of the following:
  - ERRORLEVEL < number >
  - < string1 > = < string2 >
  - EXIST < filespec >
- < d > a letter of the alphabet designating a drive
- < filespec > a 1-character to 8-character file name; optionally preceded by either or both a 1-character drive designation and a path name; optionally followed by a 1-character to 3-character extension
- < label > 1 to 8 characters
- < pathname > a slash representing the disk directory, followed by one or more 1-character to 8-character subdirectory names separated by slashes; optionally preceded by a drive designation
- < remark > for PAUSE, any combination of 121 or fewer characters, including spaces; for REM, any combination of 123 or fewer characters, including spaces
- < (set) > 0 or more file specifications or DOS command keywords enclosed in parentheses

## Parameters

- < mm > (month) one or two digits from 01 to 12
- < dd > (day) one or two digits from 01 to 31
- < yy > (year) two digits from 80 to 99
- < yyyy > (year) four digits from 1980 to 2099
- < hh > (hour) one or two digits from 00 to 23
- < mm > (minute) one or two digits from 00 to 59
- < ss > (second) one or two digits from 00 to 59

## DOS Utility Names, Types, and Formats

BACKUP (External, separate diskette)

BACKUP c: [< pathname > | < d > | -M] [-S]

CHDIR (Internal)

1. CHDIR [< pathname >]
2. CD [< pathname >]

CHKDSK (External, Diskette II)

CHKDSK [< d > | [< filespec > ...] [-P] [-V]

CLS (Internal)

CLS

COPY (Internal)

1. COPY < filespec >
2. COPY < filespec > < d > :
3. COPY < filespec > < filename > [-< ext >]
4. COPY < filespec > < d > : < filename > [-< ext >]

COPY + (Internal)

1. COPY [-B] < filespec > + < filespec > ... [-< filespec >]

2. COPY < filespec > [- { A B } ] + < filespec > [- { A B } ]
- ... [-< filespec > [- { A B } ]]

CTTY (Internal)

CTTY /DEV/< dev >

DATE (Internal)

DATE [< mm > -< dd > -< yy[yy] >]

DEL (Internal)

1. DEL < filespec >
2. ERASE < filespec >

DIR (Internal)

DIR [< d > | [< filename >] | < ext >] [-P] [-W]

ECHO (Internal)

1. ECHO
2. ECHO ON
3. ECHO OFF
4. ECHO < message >

## DOS Utility Names, Types, and Formats

FOR ... IN ... DO (Internal)

FOR%%< c > DO < set > DO < command >

FORMAT (External, Diskette II)

FORMAT [< d > | [-W] [-S] [-G] [-U] [-B]

GOTO (Internal)

GOTO < label >

IF (Internal)

1. IF < condition > < command >
2. IF NOT < condition > < command >

MENUICMP (External, Diskette II)

MENUICMP

MKDIR (Internal)

1. MKDIR < pathname >
2. MD < pathname >

PATH (Internal)

PATH [< pathname > | < pathname > ...]

PAUSE (Internal)

PAUSE [< remark >]

PRINT (External, Diskette II)

[[< filespec >] [-P]] ... | [< filespec > -C] | [< filespec > ...]

REM (Internal)

REM < remark >

RENAME (Internal)

1. RENAME < filespec > < filename > [-< ext >]
2. REN < filespec > < filename > [-< ext >]

RESTORE (Internal, separate diskette)

RESTORE

RMDIR (Internal)

1. RMDIR < pathname >
2. RD < pathname >

SHIFT (Internal)

SHIFT

TIME (Internal)

TIME [< hh > | < mm > | < ss >]

TYPE (Internal)

TYPE < filespec >

VER (Internal)

VER

VERIFY (Internal)

1. VERIFY C:\
2. VERIFY C:\

VOL (Internal)

VOL < d >

WANGCOPY (Internal, Diskette II)